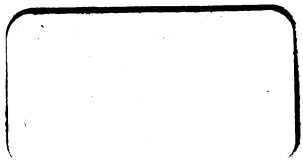

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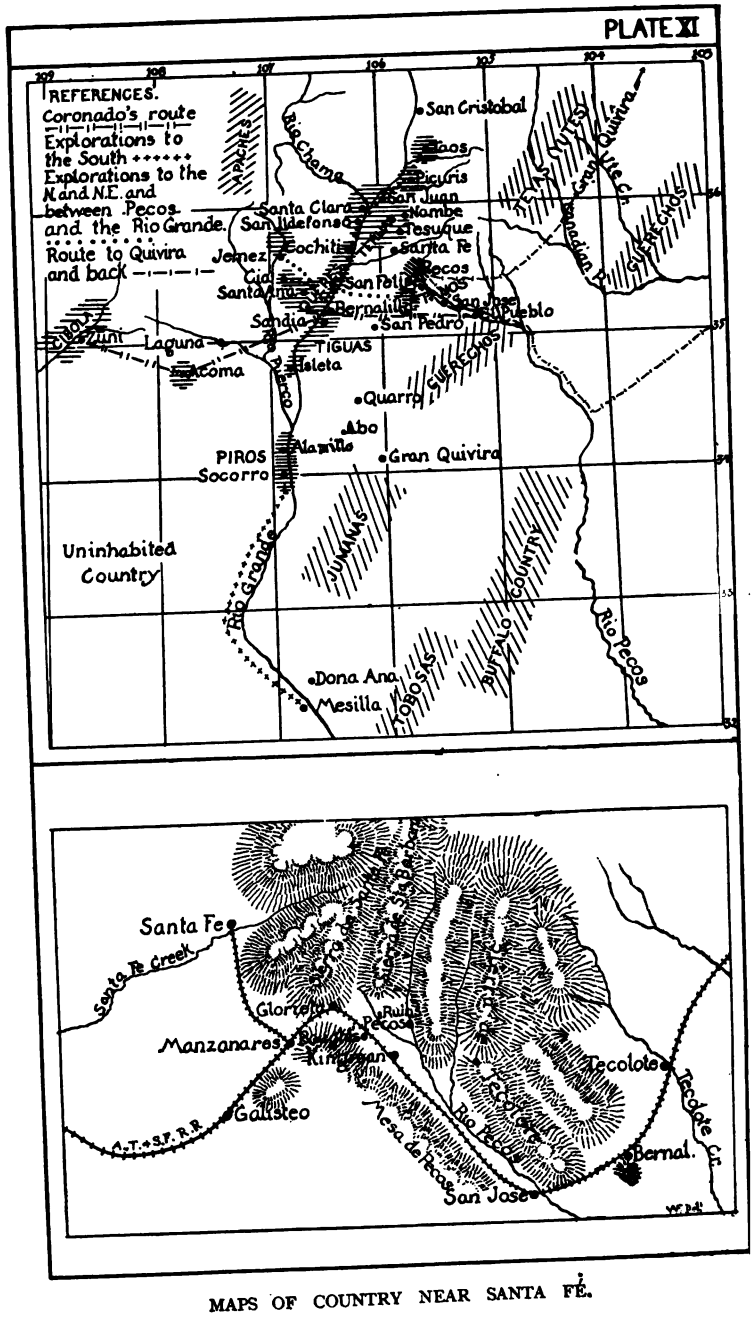

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Papers of the Archæological Institute of America.

AMERICAN SERIES.

I.

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1. HISTORICAL INTRODUCTION TO STUDIES AMONG THE SEDENTARY INDIANS OF NEW MEXICO.

2. REPORT ON THE RUINS OF THE PUEBLO OF PECOS.

BY

A. F. BANDELIER.

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I.

HISTORICAL INTRODUCTION.

PART I.

THE earliest knowledge of the existence of the sedentary Indians in New Mexico and Arizona reached Europe by way of Mexico proper; but it is very doubtful whether or not the aborigines of Mexico had any *positive* information to impart about countries lying north of the present State of Querétaro. The tribes to the north were, in the language of the valley-confederates, "Chichimecas," — a word yet undefined, but apparently synonymous, in the conceptions of the "Nahuatl"-speaking natives, with fierce savagery, and ultimately adopted by them as a warlike title.

Indistinct notions, indeed, of an original residence, during some very remote period of time, at the distant north, have been found among nearly all the tribes of Mexico which speak the Nahuatl language. These notions even assume the form of tradition in the tale of the *Seven Caves*,[1] whence the Mexicans and the Tezcucans, as well as the Tlaxcaltecans, are said to have emigrated to Mexico.[2] Perhaps the earliest mention

[1] *Las siete cuevas:* in Nahuatl *Chicomoztoc*, from *chicome*, seven, and *oztoc*, cave. Alonzo de Molina, *Vocabulario Mexicano*, 1571, parte iia. pp. 20 and 78. Fray Juan de Tobar, *Codice Ramirez*, p. 18.

[2] Fray Diego Durán, *Historia de las Yndias de Nueva-España, é Islas de Tierra Firme*, cap. i. p. 8; *Codex Vaticanus*, Kingsborough, vols. i., ii., vi.; *Anales de Cuauhtitlan: Anales del Museo Nacional de México*, tom. i. entrega 7, p. 7 of 2d vol., but incorporated in the first. "1 acatl ipan quizque Chicomoztoc in Chichimeca omitoa moternuh in imitoloca."

of this tradition may be found in the writings of Fray Toribio de Paredes, surnamed Motolinia. It dates back to 1540 A.D.[1] But it is not to be overlooked that ten years previously, in 1530, the story of the *Seven Cities*, which was the form in which the first report concerning New Mexico and its sedentary Indians came to the Spaniards, had already been told to Nuño Beltran de Guzman in Sinaloa.[2] The parallelism between the two stories is striking, although we are not authorized to infer that the so-called seven *cities* gave rise to what appeared as an aboriginal myth of as many *caves*.[3]

The tale of the Seven Caves, as the original home of the Mexicans and their kindred, prevailed to such an extent that, as early as 1562, in a collection of picture-sheets executed in aboriginal style, the so-called "Codex Vaticanus," "Chicomoztoc," and the migrations thence, were graphically represented. All the important Indian writers of Mexico between 1560 and 1600, such as Duráro, Camargo, Tezozomoc, and Ixtlilxochitl, refer to it as an ancient legend, and they locate the site of the story, furthermore, very distinctly in New Mex-

[1] *Historia de los Indios de la Nueva-España*, in *Coleccion de Documentos para la Historia de México*, by J. G. Icazbalceta, vol. i. p. 7.

[2] *Segunda Relacion Anónima de la Jornada de Nuño de Guzman*, in *Coleccion de Documentos*, etc., vol. ii. p. 303.

[3] The early literature on this subject will only be fully known when the remarkable collection called *Libro de Oro* shall have been published by Señor Icazbalceta, its meritorious owner. This valuable collection of manuscripts dates from the sixteenth century, and contains, besides a number of official reports on local matters of Mexico and districts pertaining to it, the chronicles of the tezcucan Juan Bautista Pomar, a copy of Motolinia, and a number of MSS. written between 1529 and 1547 at the instance of the much-abused Bishop Zumárraga. These MSS. contain the results of the earliest investigations on Mexican history and tradition.

The natives of Mexico appear to have had no knowledge, nay, not even the most dim recollection, of the *fauna* of South-western North America. While their so-called calendar, in the graphic tokens used to designate each one of the twenty days of their conventional "month," contains the forms of all the larger quadrupeds roaming over Mexico and Central America, the tapir excepted, we look in vain for the coyote, the bear, the mountain-sheep, and the buffalo.

ico. Even the "Popol-Vuh," in its earliest account of the Quiché tribe of Guatemala, mentions "Tulan-Zuiva, the seven caves or seven ravines." [1]

While it is impossible as yet to determine whether or not this legend exercised any direct influence on the extension of Spanish power into Northern Mexico, another myth, well known to eastern continents from a remote period, became directly instrumental in the discovery of New Mexico. This is the tale of the *Amazons*.

About 1524 A.D., Cortes was informed by one of his officers (then on an expedition about Michhuacan) that towards the north there existed a region called Ciguatan ("Cihuatlan" — place of women), near to which was an island inhabited by warlike females exclusively.[2] The usual exaggerations about metallic wealth were added to this report; and when, in 1529, Nuño de Guzman governed Mexico, he set out northwards, first to conquer the sedentary Indians of Michhuacan, and then to search for the gold and jewels of the Amazons.[3] It was while on this foray that he heard of the Seven Cities in connection with Ciguatan. This latter place was reached; and, while the fancies concerning it were speedily dispelled by reality, those concerning the Seven Cities flitted further

[1] *Popol Vuh*, part iii. cap. iv. p. 216, cap. vi. pp. 226, 228, cap. viii. p. 238, etc.

[2] Hernando Cortés, *Carta Quarta*, dated Temixtitan, 15 October, 1524, Vedia i. p. 102. Gonzalo Fernandez de Oviedo y Valdés, *Historia General y Natural de las Indias*, lib. xxxiii. cap. xxxvi. vol. iii. p. 447, lib. xxxiv. cap. viii. p. 576, Madrid, 1853. The information was derived from Gonzalo de Sandoval. See Antonio de Herrera, *Historia General de los Hechos de los Castellanos en las Islas y Tierra Firme del Mar Oceano*, dec. iii. lib. iii. cap. xvii. p. 106, edition of 1726.

[3] *Relacion de las Ceremonias y Ritos, Poblacion y Gobierno de los Indios de la Provincia de Mechuacan*, p. 113, from the *Coleccion de Documentos para la Historia de la España. Tercera Relacion Anónima de la Jornada de Nuño de Guzman, Coleccion de Documentos*, Icazbalceta, ii. pp. 443, 449, 451. *Matias de la Mota Padilla, Historia de la Nueva-Galicia*, published 1870, cap. iii. p. 27. Oviedo, lib. vi. cap. xxxiii. vol. i. pp. 222, 223.

north.[1] Guzman overran, laid waste, and finally colonized Sinaloa. He sent parties into Sonora; but, after his recall, slow colonization superseded military forays on a large scale, at least for a few years.

During this time, Pamfilo de Narvaez had undertaken the colonization of Florida.[2] His scheme failed, and cost him his life. Of the few survivors of his expedition, four only remained in the American continent, wandering to and fro among the tribes of the south-west. After nine years of untold hardships, these four men finally reached Sonora, having traversed the continent, from the Gulf of Mexico to the coast of the Pacific. The name of the leader and subsequent chronicler of their adventures was Alvar Nuñez Cabeza de Vaca.[3]

It is not possible to follow and to trace, geographically, the erratic course of Cabeza de Vaca with any degree of certainty. His own tale, however authentic, is so confused[4] that it becomes utterly impossible to establish any details of location. We only know that, in the year A.D. 1536, he and his associates finally met with their own countrymen about Culiacan.[5]

[1] *Quarta Relacion Anónima de la Jornada de Nuño de Guzman, Coleccion de Documentos*, Icazbalceta, ii. p. 475. Oviedo, lib. vi. cap. xxxiii. vol. i. p. 223.

[2] In 1527, Herrera, dec. iv. lib. ii. cap. iv. pp. 26, 27.

[3] He was treasurer of Narvaez' expedition, and subsequently, upon his return, or rather in 1541, became *adelantado* of Paraguay.

[4] He wrote all from memory. The title of his work is *Naufragios de Alvar Nuñez Cabeza de Vaca, y Relacion de la Jornada que hizo á la Florida.* It was first printed in 1555, at Valladolid. My references are to the reprint in Vedia's *Historiadores Primitivos de Indias*, vol. i.

[5] Cabeza de Vaca, *Naufragios*, etc., cap. xxxvii. p. 548, xxxiv. p. 545. According to Herrera, dec. vi. lib. i. cap. vii. p. 11 and cap. viii. p. 11, it might be either 1536 or 1534, "el año pasado de 1534. Oviedo, lib. xxxv. cap. vi. p. 614, intimates as much as 1538. Fray Antonio Tello, *Historia de la Nueva-Galicia*, fragment preserved in *Coleccion de Documentos*, Icazbalceta, ii. cap. xii. p. 358, says "habian llegado ese año de treinta y tres á aquellas tierras," 1533.

They reported that, when their shiftings had cast them far to the west of the sinister coast of what was then called "Florida," settlements of Indians were reached which presented a high degree of culture.[1] These settlements they described as having a character of permanence, but we look in vain for any accurate description of the buildings, or of the material of which they were composed.[2] For such a report of important settlements in the north, the mind of the Spanish conquerors in Mexico was, as we have already intimated, well prepared.

During their stay among the nondescript tribes of Southwestern North America, Cabeza de Vaca and his companions had tried to scatter the seeds of Christianity, — at least, they claimed to have done so. The monks of the order of St. Francis then represented the "working church" in Mexico. One of their number, Fray Marcos de Nizza, who had joined Pedro de Alvarado upon his return from his adventurous tour to Quito in Ecuador, and who was well versed in Indian lore,[3] at once entered upon a voyage of discovery, determining to go much farther north than any previous expedition from the colonies in Sinaloa. He took as his companion the negro Estevanico, who had been with Cabeza de Vaca on his marvellous journey.

Leaving San Miguel de Culiacan on the 7th of March,

[1] Cabeza de Vaca, cap. xxxi. pp. 542, 543.

[2] Id., p. 543.

[3] He was a native of Savoy, Italy, and was with Sebastian de Belalcazar during the latter's conquest of Quito. Juan de Velasco, *Histoire du royaume de Quito*, French translation by Ternaux-Compans, Introd. p. viii. He wrote the following books: *Conquista de la Provincia del Quito: Ritos y Ceremonias de los Indios; Las dos Lineas de los Incas y de los Scyris en las Provincias del Perú y del Quito; Cartas Informativas de lo Obrado en las Provincias del Perú y del Cuzco.* These manuscripts may still exist. According to Fray Augustin de Vetancurt (*Menologio Franciscano*, ed. of 1871, pp. 117, 118, 119), he was born at Nizza, and in 1531 came to America, being in Peru in 1532. Thence he went to Nicaragua and Mexico. He was provincial from 1540 to 1543, and died at Mexico, March 25, 1558.

1539,[1] and traversing Petatlan, Father Marcos reached V capa.[2] If we compare his statements about this place w those contained in the diary of Mateo Mange,[3] who we there with Father Kino in 1701, we are tempted to locate in Southern Arizona, somewhat west from Tucson, in the "P méria alta,"[4] at a place now inhabited by the Pima India whose language is also called "Cora" and "Nevome."[5] V capa was then "a reasonable settlement" of Indians. Then he travelled in a northerly direction, probably parallel to t coast at some distance from it. It is impossible to trace h route with any degree of certainty: we cannot even determi whether he crossed the Gila at all; since he does not me tion any considerable river in his report, and fails to gi even the direction in which he travelled, beyond stating the outset that he went northward. Still we may suppo from other testimony on the subject, that he went beyo the Rio Gila,[6] and finally he came in sight of a great I dian pueblo, "more considerable than Mexico,"—the hou of stone and several stories high. The negro Estevanico h been killed at this pueblo previous to the arrival of Fray M

[1] Fray Marcos Nizza, *Descubrimiento de las Siete Ciudades*, p. 329.

[2] Nizza, p. 332. Herrera, dec. vi. lib. vii. cap. vii. p. 156.

[3] In *Documentos para la Historia de Méjico*, 1856, 4 série, vol. i. p. 327. T diary has not even a title. Mentioned by Father Jacob Sedelmair, S. J., *Rela que hizo . . . Misionero de Tubatama*, in *Documentos para la Historia de Mé* 3a série, vol. ii. pp. 846, 848, 857, 859.

[4] On the map of Father Eusebio Francisco Kino, in *Der neue Weltbott*, by Joseph Stöcklein, vol. i. 2d edition, 1728, there appears St. Ludov. de Bac The diary of Mange, p. 327, is explicit.

[5] Manuel Orozco y Berra, *Geografía de las Lenguas y Carta Etnográfica de M ico*, part iii. cap. xxiii. pp. 345–353, etc. Francisco Pimentel, *Cuadro Desc tivo y Comparativo de las Lenguas Indígenas de México*, 1865, vol. ii. pp. 91, 116.

[6] The fact that he became the guide of Coronado, and led him to Cibola, in cates that Fray Marcos crossed the Gila, since otherwise the Spaniards wo have traversed the Sierra Madre, and entered New Mexico from Chihuah It is true that the general direction of Coronado's march from Culiacan was fr south to north, inclining to the *east*.

cos, so the latter only gazed at it from a safe distance, and then hastily retired to Culiacan. While the date of his departure is known, we are in the dark concerning the date of his return, except that it occurred some time previous to the 2d of September, 1539.[1]

To this great pueblo, "more considerable than Mexico," Fray Marcos was induced to give the name of Cibola.[2] The comparison with Mexico shows a lively imagination; still, we must reflect that in 1539 Mexico was not a large town,[3] and the startling appearance of the many-storied pueblo-houses should also be taken into account.[4]

With the report about Cibola came the news that the said pueblo was only one of seven, and the "Seven Cities of Cibola" became the next object of Spanish conquest.

It is not our purpose here to describe the events of this conquest, or rather series of conquests, beginning with the expedition of Francisco Vasquez Coronado in 1540, and ending in the final occupation of New Mexico by Juan de Oñate in 1598. For the history of these enterprises, we refer the reader to the attractive and trustworthy work of Mr. W. W. H. Davis.[5] But the numerous reports and other documents concerning the conquest enable us to form an idea of the ethnography and linguistical distribution of the In-

[1] The attest of D. Antonio de Mendoza, concerning Nizza's report, bears the date, Mexico, 2 Sept., 1539. Consequently, Fray Marcos had returned previously. See *Relation du Voyage de Cibola*, Ternaux-Compans, Appendix, p. 282.

[2] This word is said to be now found only in the dialect of the pueblo of Isleta, south of Santa Fé, under the form *sibúlodá*, buffalo. Albert S. Gatschet, *Zwölf Sprachen aus dem Südwesten Nord Amerika's*, Weimar, 1876, p. 106.

[3] Herrera, *Descripcion de las Indias*, cap. ix. p. 17, says that Mexico has 4,000 *vecinos*. This was in 1610, about.

[4] Lewis H. Morgan, *On the Ruins of a Stone Pueblo on the Animas River*, in *12th Annual Report of the Peabody Museum of American Archæology*, etc., 1880, p. 550.

[5] *The Spanish Conquest of New Mexico*, Doylestown, Pa., 1869.

dians of New Mexico in the sixteenth century. Upon t knowledge alone can a study of the present ethnograp and ethnology of New Mexico rest on a solid historical fo dation.

There can be no doubt that Cibola is to be looked for New Mexico. From the vague indications of Fray Marc we are at least authorized to place it within the limits of N Mexico or Arizona, and the subsequent expedition of Co nado furnishes more positive information.

Coronado marched — "leaving north slightly to the left — from Culiacan on. In other words, he marched east north. Hence it is to be inferred that Cibola lay nearly no of Culiacan in Sinaloa. Juan Jaramillo has left the best it erary of this expedition. We can easily identify the follow localities: Rio Cinaloa, upper course, Rio Yaquimi, and up course of the Rio Sonora.[2] Thence a mountain chain v crossed called "Chichiltic-Calli,"[3] or "Red-house" (a Me can name), and a large ruined structure of the Indians v found there.

Within the last forty years at least, this "Red house" l been repeatedly identified with the so-called "Casas Grande lying to the south of the Rio Gila in Arizona.[4] It should be forgotten that from the upper course of the Rio Son *two* groups of Indian pueblos in ruins were within reach the Spaniards. One of these were the ruins on the Gila, other lay to the right, across the Sierra Madre, in the pr

[1] Pedro de Castañeda y Nagera, *Relation du Voyage de Cibola*, translatio Ternaux-Compans, Paris, 1838, part ii. cap. iii. p. 163.

[2] Juan Jaramillo, *Relation du Voyage fait à la Nouvelle-Terre sous les Or du Général Francisco Vasquez de Coronado*, in *Voyage de Cibola*, Append. vi. pp. 366, 367.

[3] Castañeda, i. cap. ix. pp. 40, 41, ii. cap. iii. p. 162. The word is comp of *chichiltic*, a red object, and *calli*, house. Molina, ii. pp. 11, 19.

[4] General Simpson locates the "Casas Grandes" on the Gila, in lat. 33° 4′ and lon. 111° 45′ Greenwich. *Coronado's March*, p. 326.

ent district of Bravos, State of Chihuahua, Mexico. Jaramillo states that Coronado crossed the mountains to the *right*.[1] Now, whether the "Nexpa," whose stream the expedition descended for two days, is the Rio Santa Cruz or the Rio San Pedro, their course after they once crossed the Sierra could certainly not have led them to the "great houses" on the Rio Gila, but much farther east. The query is therefore permitted, whether Coronado did not perhaps descend into Chihuahua, and thence move up due north into South-western New Mexico. In any case, — whether he crossed the Gila and then turned north-eastward, as Jaramillo intimates,[2] or whether he perhaps struck the small "Rio de las Casas Grandes" in Chihuahua, and then travelled due north to Cibola, according to Pedro de

[1] *Relation*, etc., p. 365. "Nous souffrîmes quelques fatigues, jusqu'à ce que nous eussions atteint une chaîne de montagnes dont j'avais entendu parler à la Nouvelle-Espagne, à plus de trois-cents lieues de là. Nous donnâmes à l'endroit où nous passâmes le nom de Chichiltic-Calli, parce que nous avions su par des Indiens que nous laissions derrière nous, qu'ils l'appelaient ainsi," etc. Id. "On nous dit qu'elle se nommait Chichiltic-Calli. Après avoir franchi ces montagnes." . . .

[2] Jaramillo, *Relation*, etc., p. 367. Simpson, p. 325. For descriptions of the "Casas Grandes," I refer to Castañeda, i. cap. ix. pp. 40, 41, ii. cap. iii. pp. 161, 162, to be compared with Mateo Mange, *Documentos para la Historia de México*, série 4, vol. i. cap. v. p. 282, describing Father Kino's visit there in 1697, cap. x. pp. 362, 363. Cristóbal Martin Bernal, Francisco de Acuña, Eusebio Francisco Kino, etc., *Relacion*, in *Documentos*, 3 série, vol. ii. p. 884; this bears date, 4 Dec., 1697. Fray Tomás Ignacio Lizazoin, *Informe sobre las Provincias de Sonora y Nueva-Vizcaya*, *Documentos*, 3 série, ii. p. 698. Segundo Media, *Rudo Ensayo Tentativo de una Prevencional Descripcion de la Provincia de Sonora, sus Terminos y Confines*, written by a Jesuit about 1761 or 1762, and published by Buckingham Smith at S. Augustine in 1863, cap. ii. sec. 3, p. 18. Padre Font, in *Relation de Cibola*, Append. vii. pp. 383–386. Of more recent descriptions, I enumerate Lieut. W. H. Emory, *Notes of a Military Reconnaissance*, etc., *Executive Documents*, 41, pp. 80, 81; Capt. A. R. Johnston, *Journal*, etc., id. pp. 582, 584, 596, 597; John R. Bartlett, *Personal Narrative of Explorations and Incidents*, etc., vol. ii. cap. xxxii. pp. 265–280. While we can easily identify the "Casas Grandes," seen in 1846–47 and 1852, with those described in 1697, 1761, and 1775, in regard to the earliest description of "Chichilticalli," we are inclined to agree with Mr. L. H. Morgan, *Seven Cities of Cibola*, that "there is no ruin on the Gila at the present time that answers the above description."

Castañeda,[1] — the lines of march necessarily met the first sedentary Indians living in houses of stone or adobe about the region in which the pueblo of Zuñi exists. It is not to be wondered at, therefore, if all the writers on New Mexico, from Antonio de Espejo (1584) down to General J. H. Simpson (1871), with very few exceptions, have identified Zuñi with Cibola.

There are numerous other indications in favor of this assumption.

1. Thus Castañeda says: "Twenty leagues to the northwest, there is another province which contains seven villages. The inhabitants have the same costumes, the same customs, and the same religion as those of Cibola."[2] This district is the one called "Tusayan" by the same author, who places it at

[1] *Relation de Cibola*, part ii. cap. iii. p. 163, and especially part iii. cap. ix. p. 243. "On fit d'abord cent dix lieues vers l'ouest, en partant de Mexico; l'on se dirigea ensuite vers le nord-est pendant cent lieues; puis pendant six cent cinquante vers le nord, et l'on n'était encore arrivé qu'aux ravins des bisons. De sorte qu'après avoir fait plus de huit cent cinquante lieues, on n'était pas en définitive à plus de quatre cents de Mexico."

The "Casas Grandes" in Chihuahua are on the river of the same name, northwest of the city of Chihuahua, and nearly south of János. I have been unable as yet to ascertain when they first came to notice. According to Antonio de Oca Sarmiento, *Letter to the General Francisco de Gorraez Beaumont*, dated 22 Sept., 1667, in *Mandamiento del Señor Virey, Marques de Mancora, sobre las Doctrinas de Casas Grandes, que estaban en las Yumas, Jurisdiccion de San Felipe del Parral*, in *Documentos*, 4 série, vol. iii. p. 231, etc., the Padre Pedro de Aparicio died there, and the General Francisco de Gorraez Beaumont, 1 *Letter*, 25 Oct., 1667, p. 234, adds: "Que en este puesto de las Casas Grandes era parimo de minéria y segun tradicion antigua y ruinas que se veian que decian ser del tiempo de Moctezuma." A very good description of the ruins has been given by José Agustin Escudero, *Noticias Estadísticas del Estado de Chihuahua*, Mexico, 1834, cap. viii. pp. 234, 235, who visited them in 1819. Finally, Mr. J. R. Bartlett, *Personal Narrative*, etc., vol. ii. cap. xxxv., has furnished excellent descriptions and plates.

It is hardly possible to determine if these ruins would better correspond to "Chichilticalli" than those on the Gila. The fact that the former presented, in 1819, the appearance of *one* solitary building, whereas the latter, in 1697, composed a group of *eleven*, is noteworthy, but far from being a critical point.

[2] *Relation*, etc., ii. cap. iii. p. 165.

twenty-five leagues also; and "Tucayan" by Jaramillo, "to the left of Cibola, distant about five days' march."[1] These seven villages of "Tusayan" were visited by Pedro de Tobar. West of them is a broad river, which the Spaniards called "Rio del Tizon."[2]

2. Five days' journey from Cibola to the east, says Castañeda, there was a village called "Acuco," erected on a rock. "This village is very strong, because there was but one path leading to it. It rose upon a precipitous rock on all sides, etc."[3] Jaramillo mentions, at one or two days' march from Cibola to the east, "a village in a very strong situation on a precipitous rock; it is called Tutahaco."[4]

3. According to Jaramillo: "All the water-courses which we met, whether they were streams or rivers, until that of Cibola, and I even believe one or two journeyings beyond, flow in the direction of the South Sea; further on they take the direction of the Sea of the North."[5]

4. The village called "Acuco," or "Tutahaco," lay between Cibola and the streams running to the south-east, "entering the Sea of the North."[6]

It results from points 3 and 4, that the region of Cibola lay at all events *west of the present grants to the pueblo of Acoma.* There are watercourses in their north-western corner, and through the western half thereof, which become tributaries to the Rio Grande del Norte. The only settled region, or rather the region containing the remains of large settlements, lying west of the water-shed between the Colorado of the West and the Rio Grande, is much farther north.

[1] *Relation*, etc., p. 370.
[2] Castañeda, i. cap. xi. pp. 58, 63, 64.
[3] *Relation*, i. cap. xii., pp. 69, 70; ii. cap. iii. p. 166.
[4] *Relation*, p. 370. Castañeda, i. cap. xiii. p. 76.
[5] *Relation*, p. 370.
[6] Jaramillo, pp. 370 and 371.

It is the so-called San Juan district, where extensive ruins are still found, for the description of which we are indebted to General Simpson, to Messrs. Jackson and Holmes, and to Mr. Lewis H. Morgan. To reach this region, Coronado had to pass either between Acoma and Zuñi, or between the Zuñi and the Moqui towns. In either case he could not have failed to notice one or the other of these pueblos; whereas Nizza, as well as the reports of Coronado's march, particularly insist upon the fact that Cibola lay on the borders of a great uninhabited waste.

Our choice is therefore limited between Zuñi and the Moqui towns themselves; for there can be no doubt as to the identity of the rock of Acuco or Tutahaco, east of Cibola, with the pueblo of Acoma, whose remarkable situation, on the top of a high, isolated rock, has made it the most conspicuous object in New Mexico for nearly three centuries.[1]

[1] Acoma is always described with particular care by the older Spanish authors. Antonio de Espejo, *Carta*, 23 April, 1584, in *Documentos Inéditos del Archivo de Indias*, vol. xv. p. 179: "Y hallamos un pueblo que se llama, Acoma, donde nos pareció, habria mas de seis mil ánimas, el cual está asentado sobre una peña alta que tiene mas de cincuenta estados en alto," etc. Juan de Oñate, *Discurso de las Jornadas que hizo el Campo de Su Magestad desde la Nueva-España á la Provincia de la Nueva-México, Documentos Inéditos*, vol. xvi. pp. 268, 270: "A quatro de Diciembre [1598?], lo mataron en Acoma, los Indios de aquella fortaleza, que es la mejor en sitio de toda la cristiandad . . . " "dieron el primer asalto al Peñol de Acóma . . . " *Obediencia y Vassalaje á Su Magestad por los Indios del Pueblo de Acóma, Documentos Inéditos*, xvi. p. 127: "Al pié de una peña muy grande sobre la qual en lo alto délla está fundado y poblado el Pueblo que llaman de Acóma, . . ." dated 27 October, 1598. Fray Agustin de Vetancurt, *Crónica de la Provincia del Santo Evangélio de México*, trat. iii. cap. vi. p 319. "Al Oriente del Pueblo de Zia está el Peñol de Acoma, que tiene una legua en Circuito de treinta Estados de alto." *Menologio Franciscano*, p. 247. Both references are taken from the edition of 1871. Furthermore, in the anonymous *Relacion del Suceso de la Jornada que Francisco Vazquez hizo en el Descubrimiento de Cibola*, año de 1531 (should be 1541), in vol. xiv. of the *Documentos del Archivo de Indias*, we find Acuco (*east* of Cibola), "el cual ellos llaman en su lengua *Acuco*, y el padre Márcos le llamaba *Hacús:*" now Hacús forcibly recalls the proper name of Acoma, which by the Qq'uêres Indians, to whose stock its inhabitants belong, is called "Âgo."

But there can be as little doubt, also, in regard to the identity of the Moqui district with the "Tusayan" of Castañeda and of Jaramillo. When the Moqui region first was made known under that name ("Mohoce," "Mohace") in 1583, by Antonio de Espejo, it lay westward from Cibola "four journeys of seven leagues each." One of its pueblos was called "Aguato" ("Aguatobi").[1] Fifteen years later (1598), Juan de Oñate found the first pueblo of "Mohóce," twenty leagues of the first one of "Juñi" ("Zuñi") to the westward.[2] Besides, the "Rio del Tizon" was, at an early day, distinctly identified with the Colorado River of the West.[3]

[1] *Carta*, 23 April, 1584, *Documentos Inéditos*, vol. xv. p. 182.

[2] *Discurso de las Jornadas*, etc., *Documentos Inéditos*, vol. xvi. p. 274. *Obediencia y Vassallaje á Su Magestad por los Indios del Pueblo de San Joan Baptista*, id. vol. xv. p. 115. That the "Mohoces" were the Moqui is evidenced by Padre Geronimo de Zarate Salmeron, *Relacion de todas las Provincias que en el Nuevo-México se han visto y sabido así por Mar como por Tierra, desde el Año de* 1538, *hasta el Año de* 1626. *Documentos para la Historia de México*, série 3, vol. i. p. 30.

[3] Castañeda, i. cap. x. pp. 49, 50. Melchor Diaz reached the Rio del Tizon, starting from Culhuacan and Sonora. This river emptied into the Gulf of California, and he found there traces of Fernando de Alarcon. The latter went up the Rio Colorado, and learned many details about Cibola from Indians living along the river. *Relation de la Navigation et de la Découverte faite par le Capitaine Fernando Alarcon, Voyage de Cibola*, Ternaux-Compans, Append. iv. cap. i. p. 302: "Nous y trouvâmes un très grand fleuve dont le courant était si rapide, qu'à peine pouvions nous nous y maintenir," cap. v. pp. 324–326; cap. vi. p. 331. Herrera, dec. vi. lib. ix. cap. xi. p. 212. Fray Juan de Torquemada, *Monarchia Indiana*, lib. v. cap. xi. p. 609, ed. of 1723. While Alarcon was endeavoring to meet Coronado by sailing or boating up the Colorado from its mouth, the latter sent Garci-Lopez de Cardenas to explore a river which the Indians of "Tusayan" had mentioned to Pedro de Tobar; and he reached this river after twenty days' march. It is described as follows by Castañeda (i. cap. xi. p. 62): "After these twenty days' marching, they indeed reached this river, whose shores are so high that they thought themselves at least three or four leagues up in the air. The country is covered with low and crippled pines; it is exposed to the north, and the cold is so severe that, although it was summer, it could hardly be supported. The Spaniards for three days marched along these mountains, hoping to find a place where they could reach the river, which, from above, appeared to be about one fathom in width, while the Indians said it was wider than one-half league; but it was found to be impossible," etc. This is a fair picture of the cañons of the Colorado River of the West, the only one emptying into the head of the Gulf of California; and Castañeda adds (p. 65): "This river was the del Tizon."

Finally, we must notice here that the text of Hackluyt's version of Espejo's report is in so far incorrect as it leads to the inference that Espejo only admitted Cibola to be a Spanish name for Zuñi, therefore making it doubtful whether or not it was the original place ("y la llaman los Españoles Cibola"). The original text of Espejo's report distinctly says, however, "a province of six pueblos, called Zuñi, and by another name, Cibola," thus positively identifying the place.[1]

We cannot, therefore, refuse to adopt the views of General Simpson and of Mr. W. W. H. Davis, and to look to the pueblo of Zuñi as occupying, if not the actual site, at least one of the sites within the tribal area of the "Seven cities of Cibola." Nor can we refuse to identify Tusayan with the Moqui district, and Acuco with Acoma.

This investigation has so far enabled us to locate, at the time of their first discovery, *three* of the principal pueblos or groups of pueblos of New Mexico and Arizona. The pueblo of Acoma appears to have occupied at that time the identical striking position in which it is found to-day. The pueblo of Zuñi, while it undoubtedly occupies the ground once claimed by the cluster to which the name of Cibola was given, is but the remaining one of six or seven villages then forming that group, or a recent construction sheltering the remnants of their former occupants. The Moqui towns appear to be the same which the Spaniards found three hundred and forty years ago, though additions from other tribes have, as we

[1] *Carta, Documentos Inéditos*, vol. xv. p. 180: "Una provincia, que son seis pueblos, que la provincia llaman Zuñi, y por otro nombre Cibola. Richard Hackluyt, *The Third and last Volume of the Voyages, Navigations, Traffiques, and Discoveries of the English Nation.*" *El Viaie que hizo Antonio de Espeio en el Año de ochenta y tres*, pp. 457–464, has "dieron con una Provincia, que se nombra en lengua de los naturales Zuny, y la llaman los Españoles Cibola, ay en ella cantidad de Indios . . ."

shall subsequently establish, modified the character of their dwellers.

But the information to be derived from Coronado's march, on the ethnography of New Mexico, is not confined to the above. While at Cibola, Indians from a tribe or region called "Cicuyé," which was said to be found far to the east, came to see him. They brought with them buffalo-hides, prepared and manufactured into shields and "helmets." Although the Spaniards had heard of the buffalo before reaching Zuñi, the animal itself had not been met with, and accordingly Coronado sent Hernando de Alvarado to Cicuyé, and in quest of the "buffalo country."[1]

Cicuyé is the "Cicuique" of Juan Jaramillo, and the "Acuique" of an anonymous relation of the year 1541: it lay to the east of Acoma, through which the Spaniards passed.[2] Between it and Acoma was the pueblo of "Tiguex," at a distance of three days' march, while Cicuyé was five days from Tiguex.[3] General Simpson identifies the latter with a point on the Rio Grande del Norte, "at the foot of the Socorro Mountains," and then places Cicuyé at "Pecos."[4] Between Acoma and the Rio Grande there lies the Rio Puerco; and on its banks other authorities, conspicuous among whom is Mr. W. W. H. Davis, have located Tiguex, while Cicuyé, according to them, was on the Rio Grande, somewhere near the valley of Guadalupe.[5] Both conclusions have their strong points; but both of them have also their weak sides.

[1] Castañeda, ✱ cap. xii. pp. 68, 69, 70, 71, 72, 73.

[2] Jaramillo, pp. 370, 371. Castañeda, p. 69.

[3] Castañeda, p. 71.

[4] *Coronado's March*, pp. 333–336.

[5] *The Spanish Conquest of New Mexico*, cap. xxiv. p. 185, note 1; cap. xxv. p. 198, note 1; also p. 199. I attach particular importance to the opinions of Mr. Davis. He visited New Mexico at a time when it was still "undeveloped," and his writings on the country show thorough knowledge, and much documentary information. It is to be regretted that he fails absolutely to mention his sources

If it took five days of march from Zuñi to Acoma, three days more, in a northeasterly direction, would have brought the Spaniards to the Rio Grande, and certainly much beyond the Rio Puerco; and then Pecos could easily be reached in five days.[1]

But we are unable to guess, even, at the length of each journey. From Zuñi to Acoma the country was uninhabited; therefore the length of each journey may have been great, because there was nothing to attract the attention of the Spaniards, — nothing to prevent them from hastening their progress in order to reach their point of destination. From Acoma on, the ethnographical character changed. The actual distance to the Rio Grande may be shorter; but pueblos sprung up at small intervals of space, which necessitated greater caution, and therefore greater delay, in the movements of the advancing party. Still, we have a guide of great efficiency in another branch of information. The pueblo of "Tiguex," mentioned as lying three days from Acoma, indicates, seemingly, a settlement of *Tehua*-speaking Indians. Now, the "Tehua" idiom is spoken in those pueblos which lie directly north of Santa Fé. San Ildefonso, San Juan, Santa Clara, Pohuaque, Nambé, and Tesuque. But it is quite ap-

in any satisfactory manner, a defect which might deprive his valuable book of much of its unquestionable reliability and importance. The attentive student, however, finds, after going seriously through the mass of material still on hand, that Mr. Davis has been so painstaking and honest, that he is very much inclined to forgive the lack of citations.

[1] From Bernalillo or Sandia, the easiest way, and the one which Alvarado, by Coronado's order, must certainly have taken, is south of Galisteo. This would have led him to Pecos, either by the Cañon de San Cristóbal or, as I presume, to the lower valley, and thence up the river to the Pueblo. Castañeda (ii. cap. v. p. 176) speaks of abandoned villages along the route. There is a ruin at the place called "Pueblo," one at San José, and another at Kingman; all along the line of the "Atchison, Topeka, and Santa Fé Railroad." I presume, therefore, that he took this route. At all events, he went *south* of the Tanos, else he would have struck the villages called later San Lázaro and San Cristóbal, both then occupied.

parent that, considering the great distance of Santa Fé from Acoma, the journeys, as indicated in Castañeda, would fall very short of any of the pueblos mentioned.[1]

The Tehua, like all the tribes along the Rio Grande, suffered vicissitudes and consequent displacements; and it might be advanced that one or the other of the Tehua villages, formerly known as Tiguex, might now be destroyed.

Fortunately, we need not resort to such hypotheses. It appears, from documentary evidence of the year 1598, that there was, distinct from the Tehua or Tegua, a tribe of "Chiguas," or "Tiguas;"[2] and, from the notes of Father Juan Amando Niel (written between 1703 and 1710), it results that their settlements were near Bernalillo, on the Rio Grande; there

[1] The belief has been expressed to me at Santa Fé, by authority which I have learned to respect, that on the site of the present city there stood the old town of Tiguex. This belief has been strengthened by the popular tale, that the old adobe house, of two low stories, adjoining the ancient chapel of San Miguel, was an ancient Indian home. Personal inspection has, however, satisfied me of the fact that this building, while certainly very old, is certainly *not* one of an Indian "pueblo." It forms a rectangle: *Met.* 20.71′ from east to west, and 4.80′ from north to south. Its front has five doors, and the upper story as many windows. It is entirely of adobe, and may indeed have been an Indian house, but built after their old plan, when Santa Fé had already been founded. There is no notice of any pueblo on this site. Besides, documentary evidence regarding the establishment of Santa Fé absolutely ignores the existence of any Indian settlement at that place in 1598. Juan de Oñate, *Discurso de las Jornadas que hizo el Capitan de Su Magestad desde la Nueva-España á la Provincia de la Nuevo-Mexico*, in *Colecion de Documentos del Archivo de Indias*, vol. xvi. pp. 263–266. *Obediencia y Vasallaje á Su Magestad por los Indios de San Joan Baptista.* Id., Sept. 9, 1598, pp. 115, 116: "Al Padre Fray Cristóbal de Salazar, la Provincia de los Tepúas (*Tehuas*) con los pueblos de Triapé, Triáque el de Sant Yldefonso y Santa Clara, y este pueblo de Sant Joan Batista y el de Sant Gabriele el de Troomaxiaquino, Xiomato, Axol, Comitría, Quiotracó, y mas, la Cibdad de Sant Francisco de los Españoles, que al presente se Edifican."

[2] *Obediencia y Vasallaje á Su Magestad por los Indios de Santo-Domingo.* Id., p. 102. July 7, 1598. *Obediencia*, etc., *de S. Joan Baptista*, pp. 112, 115, "los Chiguas ó Tiguas."

being at that time three villages, the most northern of which was Santiago, the central one Puaray, near Bernalillo, and the most southern one San Pedro.[1] The distance between the first two pueblos, according to Fray Zarate Salmeron, in 1626, was about one and a half leagues, or five and a half English miles.[2] Tiguex, therefore, must be located on or near the site of Bernalillo. The "Rio Tiguex" of Castañeda is the Rio Grande del Norte, and the Indians of Tiguex belonged to the stock of the "Tanos" language, now spoken still by a few Indians at Galisteo, and by the inhabitants of the pueblos of Sandia and Isleta.[3] Even the direction in which the Spaniards moved from Acoma — that is, to the north-east — perfectly agrees with that in which Bernalillo lies, whereas the mouth of the Rio Puerco, below which General Simpson locates Tiguex, lies southeast of the pueblo of Acoma.

Having thus, as we believe, satisfactorily located Tiguex, it is easy to locate Cicuyé. It can be nothing else than Pecos, whose aboriginal Indian name, in the Jemez language, is "Âgin," whereas Pecos is the "Paego" of the Qq'uêres idiom. There is no other Indian pueblo answering to its description and geographical location as given by the chroniclers of Coronado. The fact that "when the army quitted Cicuyé to

[1] *Apuntamientos que sobre el Terreno hizo el Padre José Amando Niel, Documentos para la Historia de México*, 3a série, vol. i. pp. 98, 99: "Estan pobladas junto á la sierra de Puruai que toma el nombre del principal pueblo que se llama así, y orilla del gran rio." There were then three pueblos: San-Pedro, "rio abajo de Puruai;" Santiago, "rio arriba." Puaray was destroyed and in ruins in 1711. It was here that Father Augustin Ruiz was killed in 1581. Fray Gerónimo de Zarate Salmeron, *Relacion*, etc., p. 10. Fray Agustin de Vetancurt, *Menologio Franciscano*, pp. 412, 413. Jean Blaeu, *Douzième livre de la Géographie Blaviane*, Amsterdam, 1667, p. 62, calls the Tiguas "Tebas," and says they had "quinze bourgades." Vetancurt, *Menologio*, but principally *Crónica de la provincia del Santo Evangelio de México*, gives the Tiguas, before 1680, the following stations and pueblos: Isleta, Alameda, Puray, and Sandia, pp. 310–313.

[2] *Relacion*, etc., p. 10.

[3] A. S. Gatschet, *Zwölf Sprachen aus dem Südwesten Nord-Amerika's*, Weimar, 1876, p. 41.

go to Quivira, we entered the mountains, which it was necessary to cross to reach the plains, and on the fourth day we arrived at a great river, very deep, which passes also near Cicuyé,"[1] does not at all militate against it. The easiest passage, and the most accessible one from Pecos eastward, leads directly to the slopes between the Rio Gallinas and the Rio Pecos; and either of these two streams could be, and had to be, met with very near to the confluence of both.[2] For other proof, and very conclusive too, I refer to my detailed description of the Ruins of the Pueblo de Pecos.

I repeat, it is not to our purpose to describe the "faits et gestes" of Coronado and of his men, but only to discuss the results of his march for the Ethnography of New Mexico. I even exclude Ethnology in as far as it does not include language. The distribution of tribes and stocks of tribes designated by idioms, as Coronado revealed it in 1540 to 1543, is to be the final result of the discussion. Therefore, I leave the acts of the Spaniards aside everywhere, when they are not essential to the object, and do not even follow a strict chronological sequence.

After Alvarado had left Cibola for Tiguex, Coronado himself followed him; and, "taking the road to Tiguex," he crossed a range of mountains where snow impeded his march, — and during which march he and his men were once two and a half days without water, — until finally he reached a pueblo called "Tutahaco."[3] General Simpson has not paid any attention to this place. Mr. Davis places it near Laguna.[4] This author has forgotten that Tutahaco was further from Zuñi than Tiguex itself, since it took Coronado more than eleven days to reach it.[5] This could not have been the case, had he

[1] Castañeda, i. cap. xix. p. 116.
[2] Simpson, *Coronadó's March*, pp. 336.
[3] Castañeda, i. cap. xiii. p. 76.
[4] *Spanish Conquest*, cap. xxiii. p. 180, note 5, p. 181, note 6.
[5] Castañeda, p. 76.

passed *north* of Acoma; he must consequently have passed *south* of it, and, while originally following the trail to Tiguex, deviated in a direction from N.E. to E.S.E., crossing the mountains, and then finally struck the "Tiguex" pueblos, but in their southern limits, on the Rio Grande about "Isleta."[1] Castañeda is very positive in regard to the fact that "Tutahaco" was on the same river as "Tiguex," and that from the former Coronado *ascended* the stream to the latter.[2] This river was the Rio Grande; and, consequently, "Tutahaco" was south of "Puaray" or Bernalillo. There, he heard of other pueblos further south still.[3] "Tutahaco" was "four leagues to the south of Tiguex."[4]

When Coronado reached "Tiguex" at last, it thereafter became the centre of his operations. Castañeda very justly remarks: "Tiguex is the central point;"[5] and a glance at the map, substituting Bernalillo for it, will at once satisfy the reader of the accuracy of this statement.

From Tiguex an expedition was sent along the Rio Grande

[1] Isleta is probably a modern *pueblo*, that is one erected since 1598 and previous to 1680, and I shall treat it as such till I am better informed. The description by Vetancurt ("*Crónica*," etc., trat. iii. cap. v. pp. 310 and 311, as in the year 1680) is characteristic: "Fórmase un rio de la nieve que se derrite, que con el rio Norte cercan un campo de cinco leguas. . . . Es el paso para las provincias de Acoma, Zunias, Moqui. . . ." In a straight line, the distance from Bernalillo is about twenty-five miles.

[2] p. 76. "Le général remonta ensuite la rivière, et visita toute la province jusqu'à ce qu'il fut arrivé à Tiguex."

[3] p. 76. "Ils apprirent qu'en descendant la rivière ils trouveraient encore d'autres villages."

[4] Castañeda, ii. cap. iv. p. 168.

[5] Cap. vi. p. 182, part ii. In looking at the map, it will be seen that Bernalillo is, indeed, a central point. Along the Rio Grande it is almost at equal distances from Taos at the north, and Socorro at the south, whereas it is little further (in an east-westerly line) from Bernalillo to Zuñi, than from Bernalillo to the plains. The accuracy of Castañeda becomes more and more wonderful, the closer his narrative is studied and compared with the country itself. His distance exceeds the bee-line regularly almost by one-third; a very natural fact, since he computes the lengths from the routes taken.

and west of it. It discovered in succession: Quirix on the river, with seven villages; Hemes with seven villages; Aguas Calientes, three; Acha to the north-east; and, furthest in a northeasterly direction, Braba. Four leagues west of the river, Cia was met with; and, between Quirix and Cicuyé, Ximera. Further north of Quirix, Yuque-Yunque was found on the Rio Grande. An officer was also despatched to the south beyond Tutahaco, and he indeed discovered "four villages" at a great distance from the latter, and beyond these a place where the Rio Grande "disappeared in the ground, like the Guadiana in Estremadura."[1]

Through our identifications of "Tiguex" with *Bernalillo*, of "Cicuyé" with *Pecos*, and "Tutahaco" with *near Isleta*, it becomes now extremely easy to locate all these pueblos in the most satisfactory manner. "Quirix" is the *Queres* district Santo-Domingo, Cochití, etc.[2] "Hemes" and "Aguas Calientes," together form the *Jemez* and *San Diego* clusters of pueblos,[3] "Acha" is *Picuries*, "Braba," *Taos*.[4] The pueblo of "Ximera" between Pecos and Queres is the *Tanos* pueblo of *San Cristóbal*.[5] "Yuque-Yunque" are the *Tehuas*, north of

[1] These facts are taken from the following passages of Castañeda: i. cap. xviii., ii. cap. vi., Quéres; i. cap. xxii., ii. cap. vi., Hemes and Aguas Calientes; ii. cap. iv., Acha; i. cap. xxii., ii. cap. vi., Braba; i. cap. xviii., Cia; ii. cap. v., Ximera; and i. cap. xxii., ii. cap. vi., Yuque-Yunque, perhaps Cuyamunque.

[2] Santo Domingo, Cochiti, San Felipe, Santa-Ana, and Cia are the Quéres pueblos near the Rio Grande still remaining. They all then existed in 1598. *Obediencia*, etc., *á S. Joan Baptista*, p. 113.

[3] The Jemez or Emmes, in 1598, contained nine "pueblos," or rather places of habitation. *Obediencia*, etc., *de Santo Domingo*," p. 102. Niel, p. 99, mentions five.

[4] Castañeda, i. cap. xxii. It is unmistakable. Compare Simpson, *Coronado's March*, p. 339. Vetancurt, *Crónica*, etc., p. 319. "Este es el último pueblo hácia el norte." Jean Blaeu, *Géographie*, etc., p. 62.

[5] This is equally definite. Castañeda, ii. cap. v. p. 177. "Between Cicuyé and the province of Quirix, there exists a small very well fortified village which the Spaniards have named Ximera, and another one which appears to have been very large." This shows that the Spaniards went from Pecos by the San Cristóbal cañon.

Santa Fé,[1] and the four villages on the Rio Grande far south of Isleta, naturally are found in the now deserted towns of the "Piros" near Socorro, the most southerly and the least known of the linguistical stocks of sedentary Indians in New Mexico.[2]

In sending the officers mentioned along the Rio Grande, as far south as Mesilla probably, Coronado explored the territory beyond the range of the pueblos, and he thus secured information also concerning the roaming tribes. It is essential that I should touch these here also, because the subsequent history of the village Indians cannot be understood without connection with their savage surroundings. I might as well state here, that west of the Rio Grande and south of Zuñi, the entire south-west corner of New Mexico, appears to have been uninhabited in 1540. Stray hunting parties may have visited it, though there was hardly any inducement, since the buffalo was found east of the Rio Grande only, as far as New Mexico is concerned.[3]

The country visited along the Rio Grande, as far as Mesilla, appears not to have given any occasion for its explorers, to mention any wild tribes as its occupants. Still we know that, east of Socorro and south-east, not forty years after Coronado, the "Jumanas" Indians claimed the Eastern portions of Valencia and Socorro counties; the regions of Abo, Quarac, and Gran Quivira.[4] These savages, also called "Rayados"

[1] To-day Tezuque, Nambé, Santa Clara, San Juan, San Ildefonso, Pojuaque, and, besides, Cuyamunque in ruins.

[2] The Piros were totally dispersed during the intertribal wars of 1680–89. Niel, p. 104. Senecu, near Mesilla, is a Piros pueblo, founded by Fray Antonio de Arteaga in 1630. Fray Balthasar de Medina, *Chrónica de la Provincia de S. Diego de México de Religiosos Descalzos de N. S. P. S. Francisco de la Nueva-España*, México, 1682, lib. iv. cap. vii. fol. 168. Vetancurt, *Crónica*, p. 309. It is therefore a Spanish "colony," and not an original pueblo.

[3] Castañeda, i. cap. ix., ii. cap. iii. iv. p. 183, vii. p. 188. Fray Marcos de Niza, pp. 274–276, Jaramillo, pp. 368, 369.

[4] Antonio Espejo, *Viaje*, etc. Vetancurt, *Crónica*, etc., pp. 302, 303.

("Striated" from their custom of painting or cutting their faces and breasts for the sake of ornament), were reduced to villages in 1629 only, by the Franciscans; and the ruins which are now called Gran Quivira date from that time.[1] Dona Ana county was (from later reports which I shall discuss in a subsequent paper), roamed over, towards the Rio Grande, by equally savage hordes, to which Antonio de Espejo and others give the name of "Tobosas."[2] It is, of course, impossible to assign boundaries to the Ranges of such tribes.

Very distinct ethnographic information, however, is given by Coronado himself, as well as by Castañeda and by Jaramillo, in regard to north-eastern New Mexico. This information was secured in the year 1542, during his adventurous expedition in search of Quivira.

In regard to the route followed by him, I can but, in a general way, heartily accept the conclusions of General Simpson.[3] If, in some details, we may have some doubts yet, I gladly bow to his superior knowledge of the country and to his experience of travelling in the plains, in the latter of which I am totally deficient. Coronado started from Pecos, he crossed, probably, the Tecolote chain, threw a bridge over the Rio Gallinas, and then moved on to the northeast at an unknown distance. Although not as yet satisfied that he reached as far north-east as General Simpson states, and believing that he moved more in a *circle* (as men wandering astray in the plains are apt to do), there is no doubt but that he went far into the "Indian territory,"

[1] Vetancurt, *Crónica*, etc., trat. iii. cap. iv. pp. 302, 303–305, cap. vi. pp. 324, 325.

[2] Espejo, *Viaje*, etc.

[3] *Coronado's March*, pp. 336–339. Don José Cortes, *Memorias sobre las Provincias del Norte de Nueva-España*, 1799. MSS. of the library of Congress, fol. 87.

and that Quivira — which, by the way, is plainly described as an agglomeration of Indian "lodges" inhabited, not by sedentary Indians of the pueblo type, but by a tribe exactly similar in culture to the corn-raising aborigines of the Mississippi valley[1] — was situated at all events somewhere between the Indian territory and the State of Nebraska. This is plainly confirmed by the reports of Juan de Oñate's fruitless search of Quivira in 1599,[2] and principally by the statements of the Indians of Quivira themselves, when they visited that governor at Santa Fé thereafter.[3] They told him that the direct route to Quivira was by the pueblo of Taos.

The Quivira of Coronado and of Oñate has therefore not the slightest connection, — and never had, with the Gran Quivira of this day, situated east of Alamillo, near the boundaries of Socorro and Lincoln Counties, New Mexico, and the ruins there;[4] which ruins are those of a Franciscan mission founded after 1629, around whose church a village of "Jumanas" and probably "Piros" Indians had been established under direction of the fathers.

The reports of Coronado, and others, reveal to us the east and north-east of New Mexico as the "Buffalo Country," and consequently as inhabited or roamed over by hunting savages. Of these, two tribes were the immediate neighbors of the Pueblos, — the "Teyas" to the north-east, and the "Querechos" more to the east, south of the former probably. The Ranges intermingled, and both tribes were at

[1] Coronado, Letter of Oct. 20, 1541, p. 354. Castañeda, ii. cap. viii. p. 194, Jaramillo, pp. 376, 377.

[2] He went from Santa Fé N E. and E.N.E., and struck the "Escansaques:" might they have been the "Kansas?" Gerónimo de Zarate Salmeron, *Relacion*, etc., pp. 26, 27.

[3] Zarate Salmeron, p. 29.

[4] I append a valuable description of these ruins from the Surveyor-General's office at Santa Fé, communicated to me by Mr. D. J. Miller. (See p. 30.)

war with each other. The "Teyas" were possibly Yutas,[1] as these occupied the region latterly held by the Comanches. About the "Querechos" I have, as yet, and at this distance from all documentary evidence, not a trace of information.

On the ethnographical map accompanying this sketch, I have indicated the *Apaches* as occupying *North-western New Mexico.* In this locality they were found by Juan de Oñate in 1598–99.[2]

Coronado's homeward march offering no new points of interest, I shall, in conclusion, briefly survey the Ethnography of New Mexico, as it is sketched on the map, and as established by the preceding investigation of the years 1540–43.

We find the sedentary Indians of New Mexico agglomerated in the following clusters: —

1. Between the frontier of Arizona and the Rio Grande, from west to east: *Zuñi, Acoma,* with possibly *Laguna.*

2. Along the Rio Grande, from north to south, between "Sangre de Cristo" and Mesilla: *Taos, Picuries, Tehua, Queres, Tiguas* (branch of the *Tanos*), *Piros.*

3. West of the Rio Grande valley: *Jemez,* including *San Diego* and *Cia.*

4. East of the Rio Grande: *Tanos, Pecos.*

Around these "pueblos," then, ranged the following wild tribes.

[1] This is made probable through the statement of Father José Amando Niel (p. 108), to the effect that the Yutas warred against the Pananas and the Jumanas. The latter were about Socorro, therefore the Yutas must have descended east to below Pecos. Their arrival east of the Sierra Madre is placed, through the reports of the Pecos, about 1530. Castañeda, ii. cap. v., p. 178.

[2] *Obediencia,* etc., *de S. Joan Baptista,* p. 113, "todos los Apaches desde la Sierra Nevada hacía la parte del Norte y Poniento," p. 114; speaking of the Jemez, "y mas, todos los Apaches y cocoyes de sus sierras y comarcas."

1. In the north-west: *Apaches.*
2. In the north-east: *Teyas.*
3. North-east and east: *Querechos.*
4. South-east and south: *Jumanas, Tobosas.*

The south-west of the territory appears to have been completely uninhabited, and also devoid of the buffalo. The innumerable herds of this quadruped roamed over the plains occupying the eastern third of New Mexico and extending into Texas.

The *Moqui* of Arizona, clearly identified with Coronado's "Tusayan" are not noticed on the map, of course.

If now we compare these localities in 1540 with the present sites of the pueblos of New Mexico, it is self-evident that the Zuñi, Acoma, Tiguas, Queres, Jemez, Tehua, and Taos still occupy (Acoma excepted), if not the identical houses, at least the same tribal grounds. The Piros have removed to the frontier of Mexico, the Pecos are extinct as a tribe; of the Tanos and Picuries, a few remain on their ancient soil. Their fate is not a matter of conjecture, but of historical record.

While this discussion has proved, we believe, the truthfulness and reliability of the chroniclers of Coronado's expedition, and their great importance for the history of American aborigines, it establishes at the same time the superior advantages of New Mexico as a field for archæological and ethnological study. It is the only region on the whole continent where the highest type of culture attained by its aborigines — the village community in stone or adobe buildings — has been preserved on the respective territories of the tribes. These tribes have shrunk, the purity of their stock has been affected, their customs and beliefs encroached upon by civilization. Still enough is left to make of New Mexico the objective point of serious, practical archæologists; for, besides the

living pueblo Indians, besides the numerous ruins of their past, the very history of the changes they have undergone is partly in existence, and begins three hundred and forty years ago, with Coronado's adventurous march.[1]

AD. F. BANDELIER.

SANTA FÉ, N. M., Sept. 19, 1880.

[1] In a subsequent paper, I hope to continue this "Historical Introduction," in the shape of a discussion of the various expeditions into New Mexico, and from it to other points north-west and north-east, up to the year 1605.

NOTE.

THE GRAND QUIVIRA. See p. 26.

THE following extract is from the "General Description" in the field-notes of the survey in 1872 of the base line of the public surveys in New Mexico by United States Deputy Surveyor Willison, taken from the original notes on file at the United States Surveyor General's office at Santa Fé: —

"The Gran Quivira, about which so much has been written and so many attempts made to reconcile with the city of that name spoken of by the early Spanish explorers, and which was said by them to be the seat of immense wealth, is passed through by the line in Sec. 34, range 8 East. The most prominent building is the church, which, as well as all the other buildings, is of limestone laid in mortar. The ground plan presents the form of a cross. The dimensions of the buildings are as follows: —

"Width of short arm of cross, 33 feet; width of long arm of cross, 42 feet. Their axes are respectively 48 feet long and 140.5 feet long, and their intersection 35 feet from the head of the cross. The walls have a thickness of 6 feet, and a height of about 30 feet. The main entrance has a height of 11 feet, an outside width of 11 feet, and an inside width of 16.5 feet. The church is situated due east and west, having its front to the east.

"Extending south from the church a distance of 160 feet, and connected with it by a door in the short arm of the cross, is a building containing a number of apartments. On the window-frames of this building the mark of the carpenter's scribe is still plainly visible, though doubtless exposed to the action of the atmosphere for nearly two centuries. The carved timbers in the church are still in a good state of

preservation; a portion of the roof still remains; some of the timbers must have weighed 3,000 pounds at the time they were brought to this place, and they could not have been procured within a less distance than sixteen miles.

"The site of the ruins is elevated about one hundred feet above the surrounding country, and embraces an area of about eighteen acres. The town has been well and compactly built, and probably contained a population approaching five thousand souls. Numerous excavations have been made by the Mexicans in search of the treasures said to have been left by the Jesuits when they were expelled by the Indians. In one of these excavations I found a large quantity of human bones, including a skull. From the formation of the latter, and its thickness, it was undoubtedly that of an Indian.

"The questions that arise in contemplating these ruins are, how was it possible for such a number of people not only to exist, but to build a town of such superior construction at a point which is now entirely destitute of water, and to which water cannot be brought from any present source, the nearest water being fifteen miles distant? what was their occupation? and what has become of them?

"That this town was the abode of Jesuit [Franciscan?] priests, and a tribe of Indians under their control, the architecture of the buildings conclusively shows.

"That they were there for agricultural and pastoral purposes I consider certain, from the fact that there are no evidences of mines, or any mineral indications of any kind in the surrounding country, and that the country, with the single exception of the absence of water, is well adapted to the mode of cultivation pursued and crops raised by the Indians.

"That water was brought there from some distant point — and distant it would have been — cannot be the case, as the face of the country would have required the construction of numerous aqueducts for its conveyance, remains of which would be found at the present time; and why would a people bring water a long distance for the purpose of working lands no more valuable than such as could have been had at the water?

"Where, then, did the inhabitants get the water necessary for their subsistence? There are two arroyos between the ruins and the Mesa Jumanes, within a mile of the town, having well-defined watercourses,

which might have contained permanent water at the time that the town was inhabited. Even at the present time, the drainage from these arroyos furnishes water for a laguna some five miles below that lasts during about one half the year. Again, springs may have existed around the rise upon which the town is situated that, from natural causes, have become dry.

"The phenomenon of the failures of water is no uncommon one in this region, as is evidenced by the numerous vents where the surrounding rocks show the action of running water.

"A case directly supporting the assumption of the failure of the water is furnished at a place about thirty-five miles northerly from the Gran Quivira, known as 'La Cienega.' At this point a stream of water, furnished by two springs, and running to a distance of about a mile at all seasons of the year, which has never been known to be dry within the memory of the oldest inhabitant, has, within the last year, entirely disappeared; and even digging to a considerable depth in the bed of the late springs fails to find the stream, or the channel by which it has so mysteriously disappeared.

"To those at all familiar with the cretaceous formation of the south-eastern portion of New Mexico, and who have seen the numerous rivers that flow hundreds of inches of water within a few yards of where they make their first appearance, and the total disappearance of these streams within a few miles, who have seen the water flowing in caves and subterraneous streams, and the fact that the whole country is cavernous, can easily imagine the possibility of a stream acting upon its cretaceous bed, and eventually wearing a channel, to connect with some immense cavern, and disappearing at once from the surface beyond all reach of human power.

"To the south of the Gran Quivira, at a distance of about twenty miles, commences a *mal pais*, an immense bed of lava, sixty miles in length from north to south, and covering an area of five hundred square miles. To the south-west of this commences a salt marsh, which has an area of fifty square miles, and which is fed entirely by subterranean streams from the Sacramento and White Mountains, receiving without doubt by the same means the drainage of this plain for a hundred miles to the north. The above facts are, I think, sufficient to account for the absence of water at the present time near Gran Quivira.

"As to what became of the inhabitants of this place, as well as those of Abo and Quarrá to the north-west, — towns that are coeval with the Gran Quivira, — we can only conjecture. The most reasonable conclusion that can be arrived at is that they were exterminated by the Spaniards upon their reoccupation of the country. Though history is silent as to the complete operations of the Spaniards upon their return to New Mexico, yet it is a fact established by documentary evidence that a relentless war was waged against the Indians, and a number of tribes are spoken of as being engaged in certain battles, of which tribes we know nothing at the present day; and in some instances it is stated that some tribes sued for peace, and promised obedience to the rule of the conquerors, for which they received grants of lands that they at present occupy. The inhabitants of Gran Quivira, Abo, and Quarro would be among the first that the Spaniards would meet on their reoccupation of the country, and there is every reason to believe that they were exterminated by the incensed invaders."

II.

A VISIT

TO THE

ABORIGINAL RUINS

IN THE

VALLEY OF THE RIO PECOS.

II.

A VISIT TO THE ABORIGINAL RUINS IN THE VALLEY OF THE RIO PECOS.

ABOUT thirty miles to the south-east of the city of Santa Fé, and in the western sections of the district of San Miguel (New Mexico), the upper course of the Rio Pecos traverses a broad valley, extending in width from east to west about six or eight miles, and in length from north-west to south-east from twenty to twenty-five. Its boundaries are,— on the north and north-east, the Sierra de Santa Fé, and the Sierra de Sánta Bárbara, or rather their southern spurs; on the west a high *mesa* or table land, extending nearly parallel to the river until opposite or south of the peak of Bernal; on the east, the Sierra de Tecolote. The altitude of this valley is on an average not less than six thousand three hundred feet,[1] while the *mesa* on the right bank of the river rises abruptly to nearly two thousand feet higher; the Tecolote chain is certainly not much lower, if any; and the summits of the high Sierras in the north rise to over ten thousand feet at least.[2]

[1] Lieut.-Col. W. H. Emory, *Notes of a Military Reconnoissance from Fort Leavenworth, in Missouri, to San Diego, in California, Executive Document* 41, Washington, 1848. *Meteorological Observations*, p. 163. Camp 44, half-mile south of the Pecos, Aug. 17, 1846, altitude six thousand three hundred and forty-six feet. Camp 45, on the Pecos, near Pecos village, August 18, six thousand three hundred and sixty-six feet.

[2] This is the lowest height of the peaks seen from the valley. Some of the other tops are much higher yet. The altitude of Santa Fé Baldy, for instance, exceeds twelve thousand feet.

The Rio Pecos (which empties into the Rio Grande fully five degrees more to the south, in the State of Texas) hugs, in the upper part of the valley, closely to the mountains of Tecolote, and thence runs almost directly north and south. The high *mesa* opposite, known as the Mesa de Pecos, sweeps around in huge semicircles, but in a general direction from north-west to south-east. The upper part of the valley, therefore, forms a triangle, whose apex, at the south, would be near San José: whereas its base-line at the north might be indicated as from the Plaza de Pecos to Baughl's Sidings; or rather from the Rio Pecos, east of the town, to the foot of the *mesa* on the west, a length of over six miles. Nearly in the centre of this triangle, two miles west of the river, and one and a half miles from Baughl's, there rises a narrow, semicircular cliff or *mesilla*, over the bed of a stream known as the Arroyo de Pecos.[1] The southern end of this tabular cliff (its highest point as well as its most sunny slope) is covered with very extensive ruins, representing, as I shall hereafter explain, *three distinct kinds of occupation of the place by man*. These ruins are known under the name of the Old Pueblo of Pecos.

The tourist who, in order to reach Santa Fé from the north, takes the Atchison, Topeka & Santa Fé Railroad at La Junta, Colorado, — fascinated as he becomes by the beauty as well as by the novelty of the landscape, while running parallel with the great Sierra Madre, after he has traversed the Ratonis at daybreak, — enters a still more weird country in the afternoon. The Rio Pecos is crossed just beyond Bernal, and thence on he speeds towards the west and north: to the left, the towering Mesa de Pecos, dark

[1] Not to be confounded with the Rio de Pecos proper. The *arroyo* is not found on most of the maps. Its width is about 100 m. — 330 ft. — but there is scarcely ever more than a mere fillet of very clear, limpid water in it.

pines clambering up its steep sides; to the right, the broad valley, scooped out, so to say, between the *mesa* and the Tecolote ridge. It is dotted with green patches and black clusters of cedar and pine shooting out of the red and rocky soil. Scarcely a house is visible, for the *casitas* of adobe and wood nestle mostly in sheltered nooks. Beyond Baughl's, the ruins first strike his view; the red walls of the church stand boldly out on the barren *mesilla;* and to the north of it there are two low brown ridges, the remnants of the Indian houses. The bleak summits of the high northern chain seem to rise in height as he advances; even the distant Trout mountains (Sierra de la Trucha) loom up solemnly towards the head-waters of the Pecos. About Glorieta the vale disappears, and through the shaggy crests of the Cañon del Apache, which overlooks the track in awful proximity, he sallies out upon the central plain of northern New Mexico, six thousand eight hundred feet above the sea-level. To the south-west the picturesque Sandia mountains;[1] to the west, far off, the Heights of Jemez and the Sierra del Valle, bound the level and apparently barren table-land. An hour more of fearfully rapid transit with astonishing curves, and, at sunset, he lands at La Villa Real de Santa-Fé.

Starting back from Santa Fé towards Pecos on a dry, sandy wagon-road, we lose sight of the table-land and its environing mountain-chain, when turning into the ridges east of Manzanares. Vegetation, which has been remarkably stunted until now, improves in appearance. However rocky the slopes are, tall pines grow on them sparsely: the Encina appears in

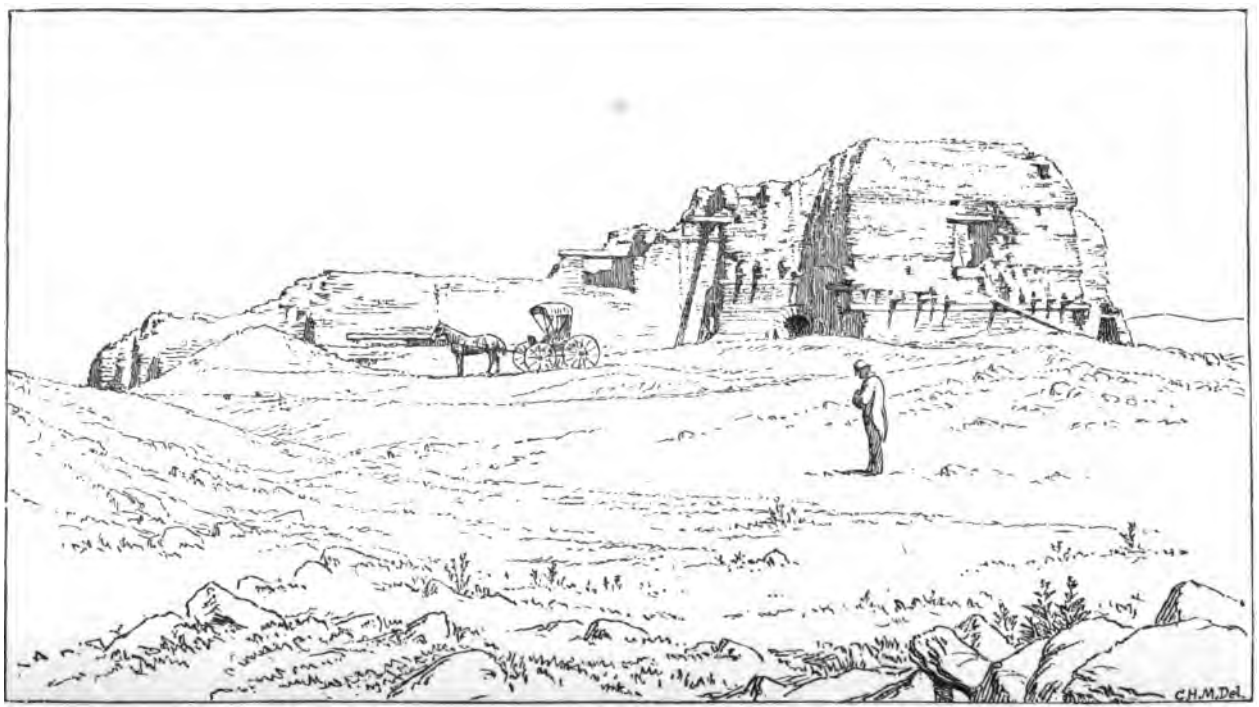
[1] They are very picturesque objects, and stand out boldly, appearing to rise directly from the plain. Their height is stated to be about thirteen thousand feet. In this vicinity are the Placitas, now famous for mineral wealth (gold and silver), and the Cerrillos, also rich in ore, and containing beautiful green and blue turquoises, of which I saw excellent specimens in possession of His Excellency Governor L. Wallace.

thickets; *Opuntia arborescens* bristles dangerously as a large shrub; mammillary cactuses hide in the sand; even an occasional patch of Indian corn is found in the valleys. It is stunted in growth,[1] flowering as late as the last days of the month of August, and poorly cultivated. The few adobe buildings are mostly recent. Over a high granitic ridge, grown over with *piñon* (all the trees inclined towards the north-east by the fierce winds that blow along its summit), and from which the Sierra de Sandia for the last time appears, we plunge into a deep valley, emptying into the Cañoncito, and thence follow the railroad track again through a deep gorge and pleasant bottom, overgrown with pines and cedars, past Glorieta to Baughl's.[2] It required all the skill and firmness of my friend and companion, Mr. J. D. C. Thurston, of the Indian Bureau at Santa Fé, to pilot our vehicle over the steep and rocky ledges. From Baughl's, where I took quarters at the temporary boarding-house of Mrs. Root (to whose kindness and motherly solicitude I owe a tribute of sincere gratitude), a good road leads to the east and south-east along the Arroyo de Pecos. In a direct line the distance

[1] This is, however, only accidental, and exclusively due to nine months of consecutive drouth. Generally the strips of bottom-land have a rich soil, and grow fine corn, wheat, and oats.

[2] Baughl's Sidings is a switch and large storing-place for ties. Even the Spaniards call it La Switcha. It is about 800 m. — 2,620 ft. — from the foot of the *mesa*, in a belt of fine large pine timber, very high, and gives glimpses of splendid views over the valley of Pecos to the Sierras beyond. Climate fine, but nights very cold. The buildings are as yet nearly all temporary; it is more a camp than a place as is it now. I spent ten very happy days here, from the 28th of August to the 6th of September, — or rather nights, since the days were, with two exceptions (5th and 6th of September, when I visited Pecos town and explored the high *mesa*), devoted to the study of the ruins. I shall always gratefully remember the uniform kindness and attention with which its inhabitants and transient guests have treated me, and assisted me in my work. Aside of those whom I shall have occasion to name in the body of my report, I take occasion to express my thanks here to Messrs. McPherson & Co., and to their obliging manager, Mr. Wright; also to the station agent.

PLATE VI



VIEW OF CHURCH, FROM THE SOUTH.

the ruins is but a mile and a half, but after nearing the banks of the stream (which here are grassy levels) one is kept at a distance from it by deep parallel gulches. So we have to follow the *arroyo* downwards, keeping about a quarter of a mile to the west of it, till, south of the old church itself, the road at last crosses the wide and gravelly bed in which a fillet of clear water is running. Then we ascend a gradual slope of sandy and micaceous soil, thinly covered by tufts of *grama*; a wide, circular depression succeeds to this, beyond it flat mounds of scarcely 0.50 m. — 20 in. — elevation are covered extensively with scattered and broken stones. Further on distinct foundations appear, recognizable chiefly by, or founded originally upon, thick walls of stone sunk into the ground and much worn, — sometimes divided into small compartments, again forming large enclosures. To the south a conspicuous, though small, mound is visible. Immediately before us, due north, are distinct though low stone walls of stones; and above them, on a broad terrace of solid earth, completely shutting off the *mesilla* or tableland behind, on which the Indian houses stand, there arises the massive former Catholic temple of Pecos.

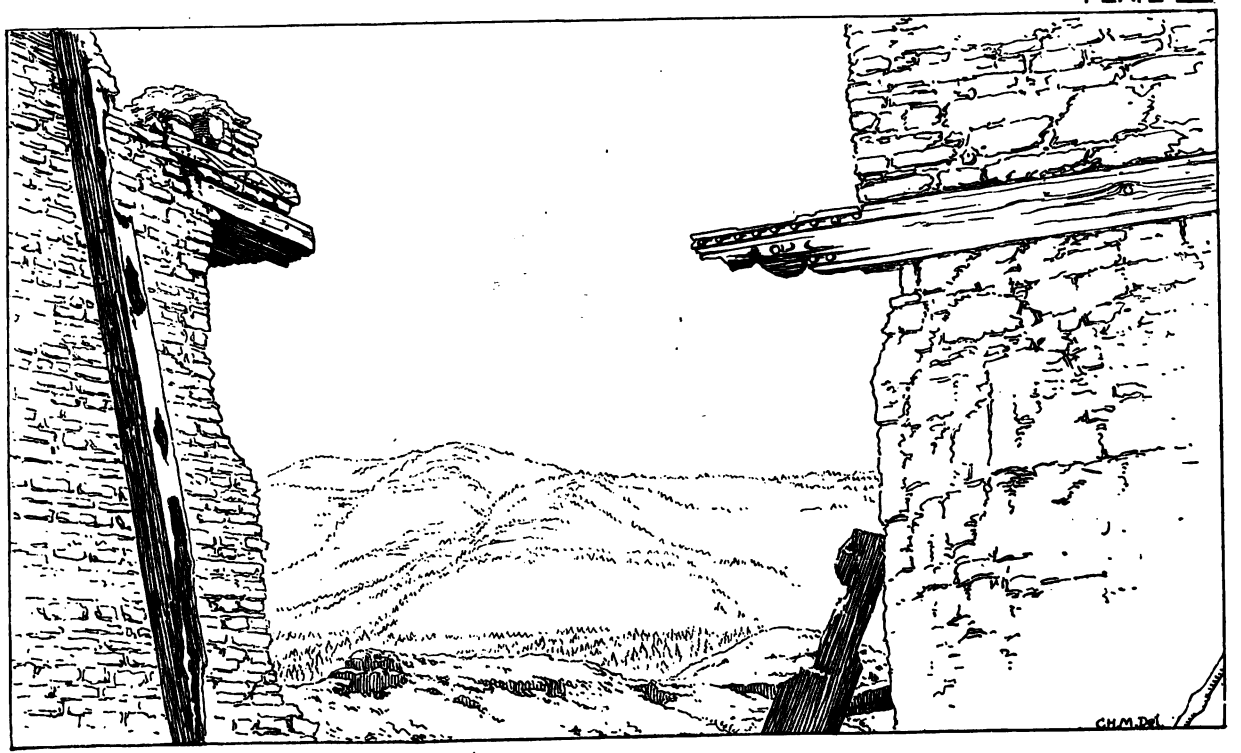
The building forms a rectangle, about 46 m. — 150 ft. — long, from east to west, and 18 m. — 60 ft. — from north to south. The entrance was to the west, the eastern wall being still entire and standing. Plate I., Fig. 2, gives an idea of its two narrow gateways, each capped by a heavy lintel of hewn timber, *b*, carved beam of wood across.

The roof of the building is gone, and on the south side a part of the walls themselves are reduced to a few metres in height. The church may originally have been not less than 10 m. — 33 ft. — perhaps higher. It had, according to tradition, but one belfry and a single bell, — a very large one of brass. The Indians carried it off, it is said, to the top of the

mesa, where it broke. It is certain that a very large bell, of which I saw one fragment, now in possession of Mr. E. K. Walters, of Pecos, was found on the western slope of the Mesa de Pecos, about three miles from its eastern rim, in a *cañada* of the Ojo de Vacas stream, towards San Cristóbal. Mr. Thomas Munn, of Baughl's, took the pains of piloting me a whole day (6th of September) through the wilderness of the *mesa*, and showing me the place where this interesting relic was finally deposited. I shall return to this by and by.

Mrs. Kozlowski (wife of a Polish gentleman, living two miles south on the *arroyo*) informed me that in 1858, when she came to her present home with her husband, the roof of the church was still in existence. Her husband tore it down, and used it for building out-houses; he also attempted to dig out the corner-stone, but failed. In general, the vandalism committed in this venerable relic of antiquity defies all description. It is only equalled by the foolishness of such as, having no other means to secure immortality, have cut out the ornaments from the sculptured beams in order to obtain a surface suitable to carve their euphonious names. All the beams of the old structure are quaintly, but still not tastelessly, carved; there was, as is shown in Plate VII., much scroll-work terminating them. Most of this was taken away, chipped into uncouth boxes, and sold, to be scattered everywhere. Not content with this, treasure-hunters, inconsiderate amateurs, have recklessly and ruthlessly disturbed the abodes of the dead. "After becoming Christians," said to me Sr. Mariano Ruiz, the only remaining 'son of the tribe' of Pecos, still settled near to its site, "they buried their dead within the church." These dead have been dug out regardless of their position relative to the walls of the building, and their remains have been scattered over the surface, to become the prey of relic-hunters. The Roman Catholic Archbishop

PLATE VII



WALLS OF CHURCH, LOOKING SOUTHWEST.

of New Mexico has finally stopped such abuses by asserting his title of ownership; but it was far too late. It cannot be denied, besides, that his concession to Kozlowski to use some of the timber for his own purposes was subsequently interpreted by others in a manner highly prejudicial to the preservation of the structure.

What alone has saved the old church of Pecos from utter ruin has been its solid mode of construction. Entirely of adobe, its walls have an average thickness of 1.5 m. — 5 ft. The adobe is made like that now used, wheat-straw entering into it occasionally; but it also contains small fragments of obsidian, — minute chips of that material and broken pottery. This makes it evident that the soil for its construction must have been gathered somewhere near the *mesilla;* and the suspicion is very strong on my part that it was the *right* bank of the *arroyo* which furnished the material.[1] It is self-evident that the grounds which were used for that purpose must have antedated, in point of occupation, the date of the construction of the church by a very long period. I have measured all the adobe bricks of the church that are within easy reach, at various places, and found them alike. They all measure .55 m. × .28 m. — 22 in. × 11 in. — and .08 m. — 3 in. — in thickness. They are laid as shown in Plate I., Fig. 4.

The mortar is, as the specimen sent by me will prove, of the same composition as the brick itself.

The regularity with which these courses are laid is very

[1] On the right side of the Arroyo de Pecos, there is a wide amphitheatre bottom, which was filled with red clay, like that of which the adobe at the church is made, and which appears to have been partly dug out. The place is to the right of the road also, which there crosses the creek. The only objection to the surmise is in the fact that along this entire bottom I found not the slightest trace of obsidian. Pottery, however, is scattered everywhere. On the left side of the creek, unless more than a mile below, there is no place where the soil is sufficiently thick or sufficiently free from ruins and scattered stones, to permit the enormous quantity of clay needed for the church to be secured.

striking. The timbers, besides, are all well squared; the ornaments, scrolls, and friezes are quaint, but not uncouth; there is a deficiency in workmanship, but great purity in outline and in design.

To the south of the old church, at a distance of 4 m. — 13 ft. — there is another adobe wall, rising in places a few metres above the soil; which wall, with that of the church, seems to have formed a covered passage-way. Adjoining it is a rectangular terrace of red earth, extending out to the west as far as the church front. A valuable record of the manner in which this terrace was occupied is preserved to us in the drawing of the Pecos church given by Lieutenant W. H. Emory in 1846. It appears that south of the church there was a convent;[1] and this is stated also by Sr. Ruiz. In fact, the walls, whether enclosures or buildings, which appear to have adjoined the church, extend south from it 74 m. — 250 ft. Plate I., Fig. 2, gives an idea of their relative position, etc.: *c* is 4 m. — 13 ft. — wide; *d* is 21 m. × 46 m. — 70 ft. × 156 ft.; *e* is 25 m. × 46 m. — 82 ft. × 150 ft.; *f* is 24 m. × 46 m. — 78 ft. × 150 ft.

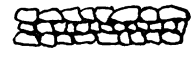
The divisions are not strictly marked, and I forbear giving any lengths, since there is great uncertainty about them.

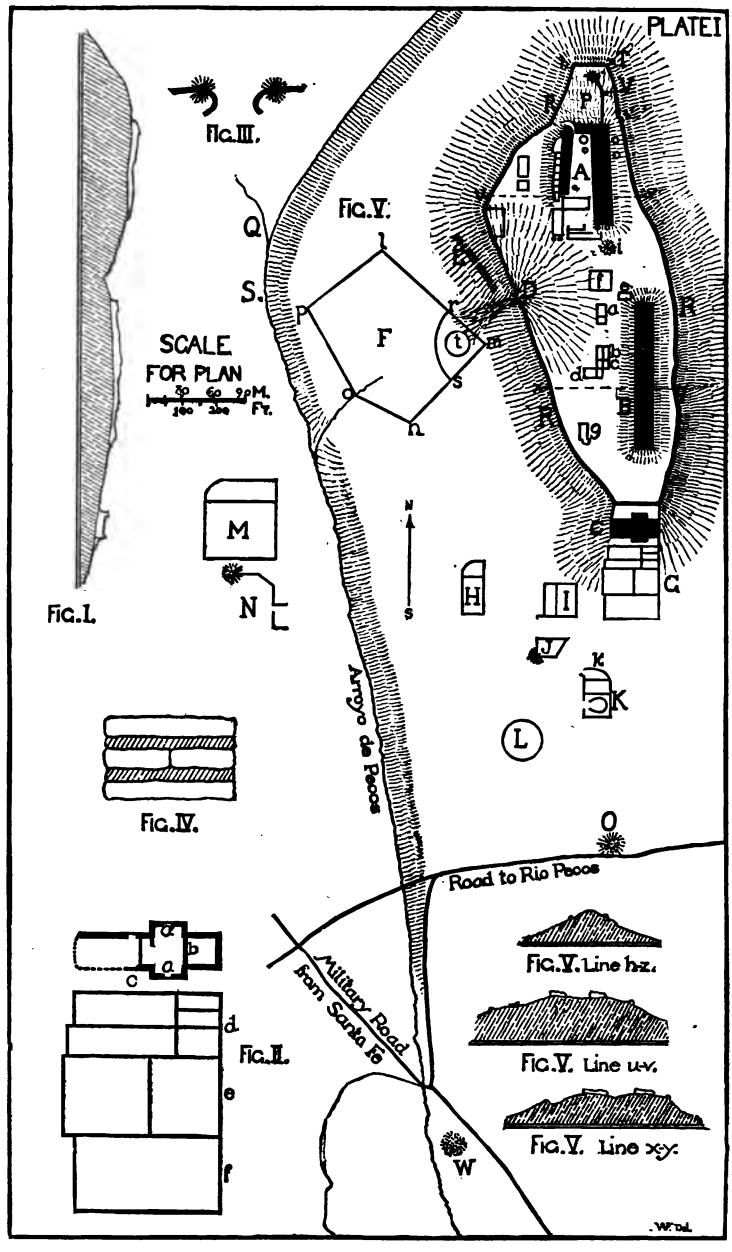
The foundation walls, where visible, are generally about 0.60 m. to 0.75 m. — 23 in. to 30 in. — wide, and composed of three rows of stones, set lengthwise, selected for size, and probably broken to fit.[2]

Looking northward from the church, a wall of broken stones, similar to the one we already noticed at the south, meets the eye. The *mesilla* itself terminates east and west

[1] Lieut.-Col. Emory, *Notes of a Military Reconnoissance*, p. 30, and two plates.

[2] The walls, or foundations rather, appear as follows: — The interstices are often filled with tufts of *grama*, and the stones themselves look very old and worn, covered with lichens and moss.





GENERAL PLAN OF RUINS OF PECOS.

in rocky ledges of inconsiderable height, and the wall stretches across its entire width of 39 m. — 129 ft. Its distance from the church is 10 m. — 33 ft.; and it thus forms, with the northern church wall, a trapezium of 10 m. — 33 ft. This enclosure is said to have been the church-yard.[1] Beyond it the *mesilla* and its ruined structures appear in full view; and from the church to the northern end, which is also its highest point, it has exactly the form of an elongated pear or parsnip. Hence the name given to it by Spanish authors of the eighteenth century, "el Navon de los Pecos."[2] This fruit-like shape is not limited to the outline: it also extends to the profile. Starting from the church, there is a curved neck, convex to the east, and retreating in a semicircle from the stream on the west. At the end of this neck, about 200 m. — 660 ft. — north of the church, there is a slight depression, terminating in a dry stream-bed emptying into the bottom of the Arroyo de Pecos south-westward; and beyond this depression the rocks bulge up to an oblong mound, nearly 280 m. — 920 ft. — long from north to south, and at its greatest width 160 m. — 520 ft. — from east to west. At the northern termination of this mound the *mesilla* curves to the north-east, and finally terminates in a long ledge of tumbled rocks, high and abrupt, which gradually merges into the ridges of sandy soil towards the little town of Pecos.[3] Pl. I., Fig. 5, gives a

[1] According to Mariano Ruiz and to Mrs. Kozlowski. The former has lived in Pecos since 1837. But few, if any, of the dead are buried there; the majority were entombed within the church itself.

[2] P. José Amando Niel, *Apuntamientos que sobre el Terreno hizo el . . . Annotations to the history of* Fray Gèronimo Zarate Salmeron, in *Documentos para la Historia de México.* 3 series, vol. i. p. 99.

[3] Called by the Spaniards Plaza de Pecos. It is a comparatively new place, the only church-book still in possession of Rev. Father Léon Mailluchet, the present priest, commences in 1862. Including the scattered *casitas* several miles around, its population is not over five hundred souls. It is situated in a narrow vale or hollow, not far west from the Rio Pecos itself, and has a modest but clean and tidy church, with a small belfry. All the houses are of adobe. Lieutenant-

tolerably fair view of the *mesilla*. Pl. I., Fig. 1, is designed to exhibit its appearance as seen from below, the highest elevation above the stream being nearly 30 m. — 95 ft.

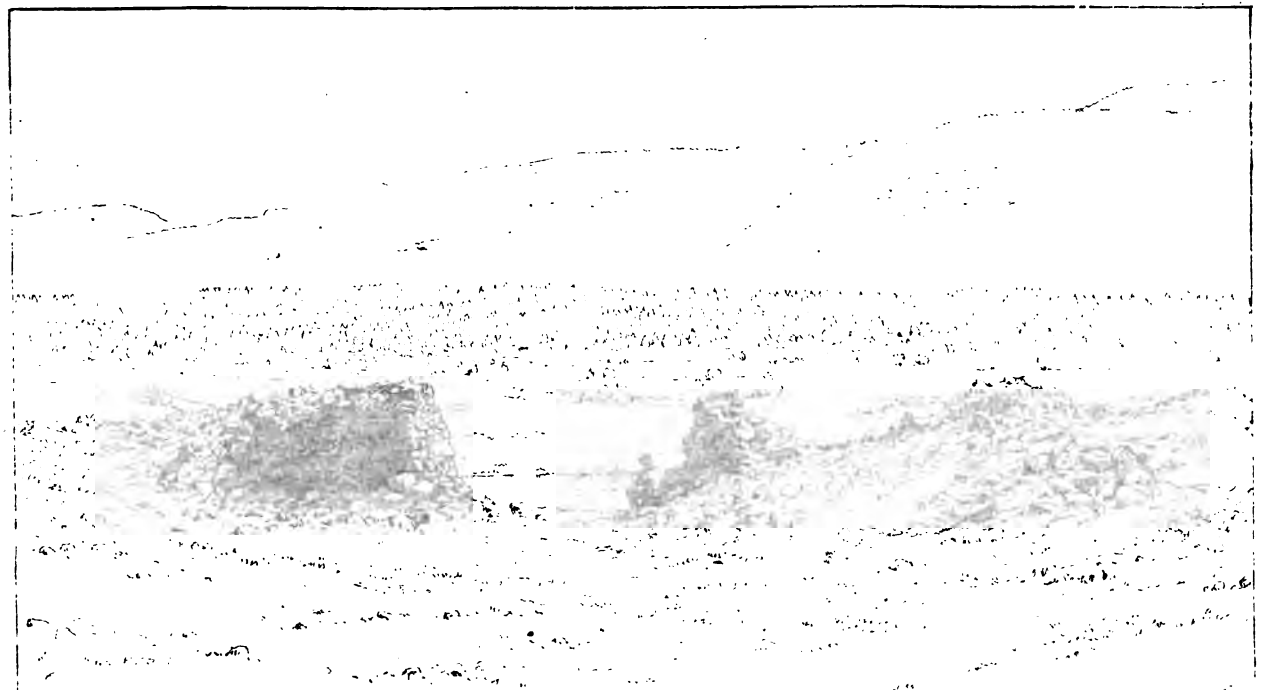
The rock of the *mesilla* is a compact, brownish-gray limestone. It is crystalline, but yet fossiliferous, very hard, and not deteriorating much on exposure. Its strata dip perceptibly to the south-west; consequently the western rim is comparatively less jagged and rocky than the eastern, and the slope towards the stream more gentle, except at the north-western corner, where the rocks appear broken and tumbled down over the slopes in huge masses.

From the church-yard wall, all along the edge of the *mesilla*, descending into the depression mentioned, and again rounding the highest northern point, then crossing over transversely from west to east and running back south along the opposite edge, there extends a wall of circumvallation, constructed, as far as may be seen, of rubble and broken stones, with occasional earth flung in between the blocks. This wall has, along its periphery, a total length of 983 m. — 3,220 ft. — according to Mr. Thurston's measurement.[1] It was, as far as can be seen, 2 m. — 6 ft. 6 in. — high on an average, and about 0.50 m. — 20 in. — thick. There is but one entrance to it visible, on the west side, at its lowest level, where the depression already mentioned runs down the slope to the south-west as the bed of a rocky streamlet. There a gateway of 4 m. — 13 ft. — in width is left open; the wall itself thickens on each side to a round tower built of stones,

Colonel Emory (*Notes, Executive Document* 41, p. 30) speaks of it in 1846 as "the modern village of Pecos, . . . with a very inconsiderable population." As yet there are but very few Americans in the plaza. My recollections of Pecos are highly pleasant (5th September), owing to the friendly reception tendered me by Mr. E. K. Walters, Sr. Juan Bacay Salazar, and Father L. Mailluchet. According to Colonel Emory, its altitude is nearly 6,366 ft. (p. 163). Lat. about 35° 30′ N.

[1] See Plate I.

PLATE IX



mixed with earthy fillings. These towers, considerably ruined, are still 2 m. — 6 ft. 6 in. — high, and appear to have been at least 4 m. — 13 ft. — in diameter; at all events the northern one. At the gateway itself the walls curve outward,[1] and appear to have terminated in a short passage of entering and re-entering lines, between which there was a passage, as well for man as for the waters from the *mesilla* into the bottom and the stream below. But these lines can only be surmised from the streaks of gravel and stones extending beyond the gateway, as no definite foundations are extant. Pl. I., Fig. 3, is a tolerably correct diagram of this gateway.

The face of the wall at each side of the gate is 1.3 m. — 4 ft. — wide. Whether there was any contrivance to close it or not it is now impossible to determine; but there are in the northern wall of the gate pieces of decayed wood embedded in and protruding from the stone-work. For what purpose they were placed there it is not permitted even to conjecture.

Having thus sketched, as far as I am able, the topography of the *mesilla*, and described its great wall of circumvallation, I now turn to the ruins which cover its upper surface, starting for their survey from the transverse wall of the old churchyard, 10 m. — 33 ft. — north of the church, and proceeding thence northward along the top of the tabulated bluff.[2]

Sixty-one metres — 200 ft. — north of our point of departure we strike stone foundations running about due east and west and resting almost directly on the rock, since the soil along the entire plateau which I have termed the neck is scarce, and has nowhere more than 1 m. — 39 in. — in depth. The eastern corner of this wall, as far as it can be made out, is 12 m. — 39 ft. — from the eastern wall of circumvallation. From this point on there extends one continuous body of

[1] See Plate IX.

[2] See Plate I., Fig. 5.

ruins, one half of which at least (the southern half), if not two-thirds, as the ground plan will show, exhibits nothing else but foundations of small chambers indicated by shapeless stone-heaps and depressions. The northern part is in a better state of preservation; a number of chambers are more or less perfect, the roofs excepted,[1] and we can easily detect several stories retreating from east to west. About 9 m. — 30 ft. — from its northern limits a double wall intersects the pile for one half of its width. The ruins beyond it, or rather the addition, is in a state of decay equal to that of the southern extremity. The western side is, generally, in a better state of preservation than the eastern, especially the north-western corner. Along the eastern side upright posts of wood, protruding from stone-heaps, often are the only indications for the outline of the structure. Along the northwest, however, such posts are enclosed in standing walls of stone, at distances not quite regularly distributed, but still showing plainly that here, at least, the outer wall presented an appearance similar to Pl. II., Fig. 4.

At the place where I measured, the upright posts stood at about 1.39 m. — 4 ft. 6 in. — from each other; the projecting wall was 2 m. — 6 ft. 6 in. — long, and 0.63 m. — 2 ft. — thick; the retreating wall 1.40 m. — 4 ft. 6 in. — long, and 0.33 m. — 13 in. — thick. The posts themselves were sometimes, but not always, backed, or even encased in adobe sheaths, built up like little chimneys in the wall itself. This mode of construction was possibly peculiar to the western side alone, and gives it a slight appearance of ornamentation, as well as more strength, the projecting walls acting like buttresses.

The whole structure, taking the sides of the *débris* as they

[1] When Mr. Louis Felsenthal of Santa-Fé came to New Mexico in 1855, and still later, in 1858, the time of the arrival of Mrs. Kozlowski, the roofs were still perfect in part.

are now scattered, extends nearly north and south 140 m. — 460 ft. — and east and west about 16 m. to 26 m. — 50 ft. to 80 ft. — thus forming a rectangle of 140 m. × 20 m. — 460 ft. × 65 ft. To determine the exact size of the building I proceeded to measure each compartment for itself, judging that the total number of these apartments, adding to their sizes the thicknesses of the walls, would finally give, within a few decimetres, the exact length and width of the house. On the ground plan I have numbered this building *B*.[1]

Beginning at the north-west corner, I ran my line almost due east to within 10 m. — 33 ft. — of the circumvallation, where I found the north-east corner indicated by a broken post of wood. Along this line I met the following sections from west to east: 2.92 m. — 9 ft. 6 in.; then a gangway, 1.55 m. — 5 ft.; chamber, 3.22 m. — 11 ft.; gangway, 1.21 m. — 4 ft.; and three chambers, 2.09 m., 2.72 m., and 2.72 m. — 7 ft., 9 ft., and 9 ft. — respectively, thus giving, adding to it eight walls of a uniform thickness of 0.33 m. — 13 in., — a total width of 19.07 m. — 63 ft. Its length was easily found to be 8.56 m. — 28 ft.; the northern appendix, therefore, forming a rectangle of 8.5 m. × 19 m. — 28 ft. × 63 ft., — and containing, as the ground-plan shows, ten rooms and two corridors, the latter running through the structure from north to south. It will also be noticed that the two middle rooms are the largest, measuring each 4.28 m. × 3.22 m. — 14 ft. × 10 ft. I must also advert, here, to the fact that this structure is extremely ruined, and that the east part of it exposes the surveyor to dangerous errors.

The line *a b*, and its continuation eastwardly to *c*, appears to form the main northern wall of the whole structure. Here the annex, just described, terminates. This wall is of unequal thickness. In the north-westerly projection

[1] Pl. II., Fig. 6.

from *a* to *b*, a length of 8 m. — 26 ft., — its thickness is 0.63 m. — 2 ft.; from *b* to *c*, on the eastern line, it is only 0.33 m. — 13 in. — thick. This inequality indicates also a division of the structure to the southward, as far as the line *d d d*, into two longitudinal sections. The western one, whose four corners are respectively *a b d d* in the diagram, contains eighteen rooms of equal size, measuring each 3.71 m. × 2.25 m. — 12 ft. × 7 ft.; it is consequently, inclusive of the rear wall and the sides, 24.24 m. × 8.08 m. — 80 ft. × 27 ft. The eastern division, comprised within the area *b c d d*, has fifteen rooms, or five longitudinal rows of three, whereas the western has six rows of three. The rooms east must therefore be larger than those west, and we see that they measure from east to west respectively, 2.25 m., 2.28 m., and 2.28 m. — 7 ft., 7 ft. 6 in., and 7 ft. 6 in.: from north to south, 3.60 m., 5.07 m., 4.43 m., 4.13 m., and 3.43 m. — 12 ft., 17 ft., 15 ft., 14 ft., and 11 ft. It is a rectangle, or rather trapezium, 22.31 m. × 7.81 m. — 70 ft. × 25 ft., — consequently the width of the building *B* is somewhat less on the line *d d d* than on the line *a b c*. The cause of this singular contraction I have found, and shall afterwards indicate.

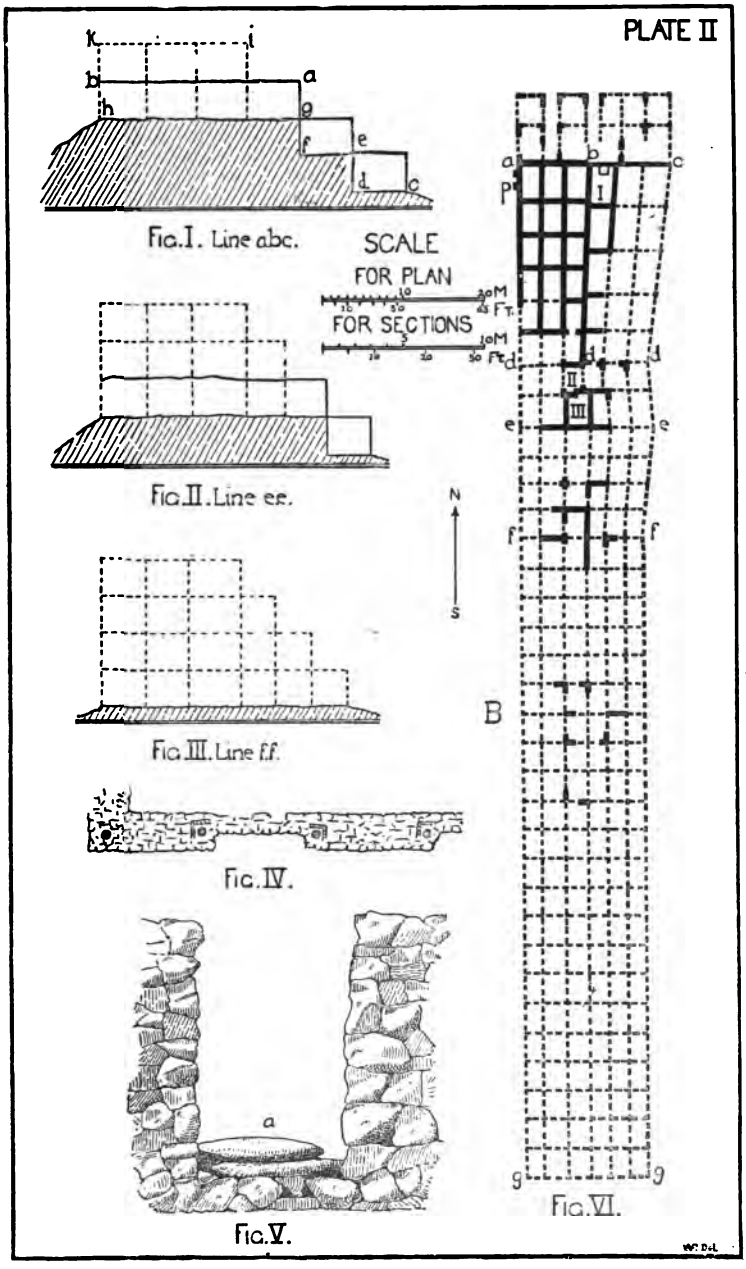
Then follows a transverse section (*d d d e e*), containing two rows of six rooms each, or twelve in all, of very unequal sizes, as the ground-plans show. This entire section appears to be trapezoidal. The line *d d d* is 15.89 m. — 52 ft. — long; the line *e e* 16.33 m. — 53 ft.; *d e* measures 7.42 m. — 24 ft. — along the west, and 8.04 m. — 27 ft. — along the east. Rooms marked *II* and *III* are particularly irregular, having, as the diagram shows, not less than six corners.

From *e e* to *f f*, another transverse section, this time of four rows of six each, or twenty-four cells in all, those of each row being of equal length, to wit 3.65 m. — 12 ft.; and in width from east to west, respectively: 2.25 m., 2.78 m., 3.18 m., 2.63

m., and 4.40 m. — 7 ft., 9 ft., 10 ft., 9 ft., and 14 ft. (the last measure being the aggregate of the two eastern compartments, the longitudinal partition being nearly obliterated). To the south of *f f* a further slight change occurs, inasmuch as the three eastern rooms, instead of being respectively 2.68 m., 2.20 m., and 2.20 m. — 9 ft., 7 ft., and 7 ft., — now become 2.25 m., 2.33 m., and 2.32 m. — 7 ft., 8 ft., and 8 ft. From *f f* to *g g*, the southern limits of the structure, the whole structure is badly ruined; and while the rooms can be counted, measurements are possible only in a few places. Still I am satisfied that no great error lies in the assumption that they were, taken longitudinally, all equal to the six rooms contained in the transverse row south of the line *f f*, that is, 3.65 m. — 12 ft. — from north to south; and in width, counting the cells from west to east, respectively, 2.25 m., 2.78 m., 3.18 m., 2.25 m., 2.33 m., and 2.32 m. — 7 ft., 9 ft., 10 ft., 7 ft., 8 ft., and 8 ft. The section, *f f g g*, which forms the southern and largest portion of the house (*B*), contains, therefore, twenty-two transverse rows of six chambers each, or one hundred and thirty-two apartments on the ground-plan; and it forms a rectangle running from north to south and east to west respectively of 80.30 m. × 15.11 m. — 260 ft. × 50 ft.

The general dimensions of this building (*B*), therefore appear as follows: —

Length from north to south, east side . .	133.81 m. — 440 ft.
„ „ west side . .	134.92 m. — 442 ft.
Width of northern appendix	19.07 m. — 63 ft.
Width along line *a b c*	19.07 m. — 63 ft.
„ „ *d d d*	15.89 m. — 52 ft.
„ „ *e e*	16.33 m. — 53 ft.
„ „ *f f*	15.24 m. — 50 ft.
Width of line *g g*, approximated	15.70 m. — 51 ft.



PLAN OF SECTIONS OF BUILDING B.

stories."[1] Sr. Mariano Ruiz told me that "they all were of three stories;" but then he mentioned, below, the "casas de comodidad," thus indicating that the lowest story was used for store-rooms. It is very apparent from the ruins that, as I have indicated in the cross-sections, the western wall was unbroken, whereas from the east the stories rose in four retreating terraces. The western wall already mentioned was given additional strength, by means of the buttresses, of which I have given a small outline. The winds blow very fiercely over the *mesilla*, especially from the northwest; there is no tree to be seen on or about it, not even a cedar-bush, higher than a couple of feet at most. Against such blasts the solid wall was necessary, while the many intersecting partitions inside gave additional strength. It was a very solid structure as against winds, notwithstanding the comparative thinness of the walls, — 0.63 m. — 2 ft. — being their greatest width, and 0.33 m. — 13 in. — their average.

With reference to the cross-sections, it now becomes possible to approximate the total number of chambers, apartments, or cells, contained in the entire building; a point impossible even to estimate from the ground-plan alone.

Leaving aside the northern appendix, about whose elevation I have not even means of conjecture, it becomes evident that the section whose four corners are marked respectively *a*, *c*, *d*, *d*, had the following number of compartments, starting with the lowest story, and remembering that, as above stated, one longitudinal row had six, and the other five, rooms: —

Lowest story	5
Second story	5
Third story. $3 \times 6 + 5$	23
Fourth story. 3×6	18
Total	51 rooms.

[1] Pedro de Castañeda de Nagera, *Relation du Voyage de Cibola*, French translation, by Ternaux-Compano, 1838. Original written about 1560. Introduction, p. ix; part ii. cap. v. p. 176.

Brought forward		51 rooms.
The section *d d e e* had probably the same arrangement, and therefore, there being but two transverse rows, it contained in all		18
Section *e e f f* contained on lower story . .	4	
Second Story. 5 × 4	20	
Third story. 4 × 4	16	
Fourth story. 3 × 4	12	
	—	52
Section *f f g g*: —		
Lower story. 22 × 6	132	
Second story. 22 × 5	110	
Third story. 22 × 4	88	
Fourth story. 22 × 3	66	
	—	396
Total number of rooms contained in building *B* .		517

These rooms are very nearly of equal size, the largest one being *III.* 2.85 m. × 4.78 m. — 9 ft. × 16 ft. — on one side, and 3.71 m. — 12 ft. — on the other, with an entering angle; the smallest room adjoining to it measuring 2.25 m. × 2.70 m. — 7 ft. × 9 ft. The entire structure, therefore, presents the appearance of a honeycomb, or rather of a bee-hive, and perfectly illustrates, among the lower degrees of culture of mankind, the prevailing principle of communism in living, which finds its parallel in the lower classes of animals. Tradition, historical relation, and analogy, tell us that this house was used as a dwelling,[1] and that consequently it was, to all intents and purposes, a communal house.

[1] Castañeda, *Relation*, i. cap. xii. p. 71; ii. cap. v. p. 176. Juan Jaramillo, *Relation du Voyage fait à la Nouvelle Terre*, app. vi. to *Voyage de Cibola*, p. 371. Fray Agustin de Vetancurt, *Crónica de la Provincia del Santo Evangelio de México* (edition of 1871), p. 323. Gaspar Castaño de la Sosa, *Memoria del Descubrimiento que . . . hizo en el Nuevo México, siendo teniente del Gobernador y Capitan General del Nuevo-Reino de Leon*, July 27, 1590, in vol. xv. of *Documentos Inéditos de los Archivos de Indias*, p. 244. The latter though, as well as Castañeda and Jaramillo, mentions evidently building *A*, but there cannot be the slightest doubt that *B* was erected for the same purpose; to wit, as a dwelling.

The height of the various stories it is almost impossible to determine. I have measured walls which appeared to be perfect, and they gave me an average of 2.28 m. — 7 ft. 6 in. — elevation. Should such be the rule, the western wall of the building, at its greatest height south, would have risen about 11 m. — 36 ft.

The northern appendix I have ignored in the above computation, because its whole appearance gives no ground for definitive statements. It seems really to be an annex, and in fact the whole building seems to have progressed, in its construction, from south to north, in point of date and time.

The southern portion of the building — the one which appears to have been erected on a plane surface — was, in all probability, the one first built. The northern portions were added to it gradually as occasion required. This is further shown by the fact that in these northern sections, along the line *a*, *b*, *c*, parts of the third story wall are patched with regular adobe bricks, about half as large as those in the church, but still made by the same process.[1] The rest of the structure is exclusively composed of stone.

It is to all intents and purposes a stone house. Two kinds of rocks predominate among the material; a slaty, gray and red, sandstone, — highly tabular, easily broken into plates of any size, — and a sandstone conglomerate, containing small pebbles from the size of a pea up to that of a small hazel-nut, — the whole rock of a gray color. When freshly broken or wetted, this conglomerate becomes very friable, and so soft that goats have left the impression of their feet on scattered fragments. When dry it becomes hard, and is always very heavy. Both kind of rocks are found in the vicinity of the *mesilla*. Besides

[1] They are evidently moulded. Their size is about 0.28 m. × 15 m. — 11 in. × 6 in. — and straw is mixed with the soil. The appearance is very much as if the adobe had been put in as a "mending;" and I am decidedly of the opinion that the northern section is the latest, and erected after 1540.

these, loose pieces of stone from the bluff itself, boulders from the creek, of convenient size, enter into the composition of the walls. Sometimes the latter consist exclusively of slabs of sandstone superposed; again there are polygonal fragments of rocks piled upon one another, with courses of tabular sandstone, forming, so to say, the basis for further piling; the foundations are usually boulders and the hardest rocks, also of greater width. There are no walls of dressed stone, but the rocks are broken to a suitable size, as may be done with any stone maul or sledge, or even by smashing with the hand and another rock. In fact the whole stonework must be termed, not masonry, but simply judicious and careful piling.[1] In performing it, great attention has been paid to having the vertical surfaces as nearly as possible vertical; but this end could be reached without the use of the plumb-line, and with the aid of mere ordinary eyesight, for the rooms are so small, and the partitions so thin, that anything not "true" could, and can yet be, "shoved" into position by a mere steady, slow push; carefully watched on the opposite side. The same applies to the angles, although they are tolerably accurate. As a general thing, the transverse walls appear to be continuous, and the longitudinal partitions to have been added afterwards, but there are also instances of the contrary. In this respect the sinuosities of the rocky foundation seem to have determined the mode of action. To fill up the gaps between the stones,

[1] It is very much like the stone-work of the Moqui Pueblos in Arizona, according to the photographs in possession of the Bureau of Ethnology at Washington, D. C.; and in some respects to the walls of the great house described by the Hon. L. H. Morgan, *On the Ruins of an Ancient Stone Pueblo on the Animas River, Eleventh and Twelfth Reports of the Peabody Museum of Archæology*, etc.; also to those figured by Dr. William H. Jackson, *Tenth Annual Report of the United States Geological and Geographical Survey of the Territories*, 1878, plate lxii. fig. 1, from the Ruins of the Rio Chaco. Compare photograph No. 6. I am led to suspect that the greater or less regularity of the courses was entirely dependent upon the kind of stone on hand, and not upon the mechanical skill employed.

and to coat them with a smooth surface within the chambers what appears to be earth from the surrounding bottoms has been flung into the crevices, thus forming a natural mortar, and at the same time a "first coat" of plaster of varying thickness. This in turn is covered with a thin white layer (now of course turning into gray, yellow, and flesh-red) much resembling our plaster, but whose composition I am unable to determine. (Specimens of the mud, containing small gravel and minute particles of mica, are sent with the other collections, also fragments of the white coating for analysis.[1])

The woodwork proper appears not to have had any connection with the strength or support of the walls, but simply to have been erected within and among the walls as a scaffold for the ceilings, which are also the floors of the higher stories. Upright posts of cedar and pine, stripped of their bark, but not squared, are, as I have already shown, set inside of the stone wall, at more or less even distances. As far as I

[1] I am just (Sept. 9) informed by Governor Wallace, that the Sierra de Tecolote, east of the ruins, contains probably gypsum, even in the form of alabaster. It is certain that nothing like lime-kilns or places where lime might have been burnt are found at any moderate distance from the ruins. The surrounding rocks, up to head of the valley and to the *mesa*, contain deposits of white, yellow, and red carbonates of lead, often copper-stained, and very impure, therefore proportionately light in weight. However, we have very positive information as to how they made their plaster, etc., in Castañeda, *Voyage de Cibola*, ii. cap. iv. pp. 168, 169. He says: "They have no lime, but make a mixture of ashes, soil, and of charcoal, which replace it very well; for although they raise their houses to four stories, the walls have not more than half an ell in width. They form great heaps of pine [thym] and reeds, and set fire to them; whenever this mass is reduced to ashes and charcoal, they throw over it a large quantity of soil and water, and mix it all together. They knead it into round blocks, which they dry, and of which they make use in lieu of stones, coating the whole with the same mixture." Substituting for the "round blocks" the stones found at Pecos, we have the whole process thoroughly explained, for indeed the mud contains bits of charcoal, as the specimens sent prove. The white coat, however, is not explained. I must state here, however, that I found the latter only in such parts of *A*, as well as of *B*, as appeared to be most recent in occupation and in construction. Further, investigations at other pueblos may yet solve the mystery.

could ascertain, these distances are regulated by the size of the rooms. These posts are coarsely hacked off at the upper end, and over them other similar beams are laid longitudinally, sometimes fitted over the posts with chips wedged in. Such is the case in a room in the northern wing of the building marked *A*, of which I shall hereafter speak.[1]

On these longitudinal beams other ones rest, laid transversely, and imbedded in the wall on the opposite side. On these again longitudinal poles are placed, also at intervals varying according to the dimensions of the chambers, and on them transversely, a layer of brush, or splinters of wood, closely overlapping each other; and the whole is capped by about .20 m. — 8 in. — of common clay or soil. Pl. III., Fig. 1, is a front view of the wooden scaffold in a lower story room, and of the ceiling which it supports.

a, clay and lower seam of brush or splinters.

b, transverse poles or beams, in case the beams are lacking.

c, longitudinal beam.

d, upright posts.

In most cases, however, the beams are transverse and the poles longitudinal, and this is where the beam (*c*) is lacking, as in the interior apartments, where the ceiling appears as in Pl. III., Fig. 2: *a*, clay; *b*, brush or splinters, *c*, poles; *d*, beams; *e*, wall.[2]

The diameter of the upright posts is, on an average, 0.28 m. — 11 in., — but even sometimes as great as 0.33 m. — 13 in., — the longitudinal and transverse beams are scarcely less thick, whereas the poles are about 0.05 m. — 2 in. — across. The

[1] See Plate VIII.

[2] Compare, in regard to the outer (western) wall of *B*, and also in regard to the inner wall, Lieut. James H. Simpson, *Journal of a Military Reconnoissance from Santa Fé, New-Mexico, to the Navajo Country, Executive Document* 64, 31st Congress, 1st section, 1850; plate 41, no. 5. Also, L. H. Morgan, *On an Ancient Stone Pueblo on the Animas River, Peabody Museum Reports*, 1880. The latter is particularly suggestive.

PLATE III

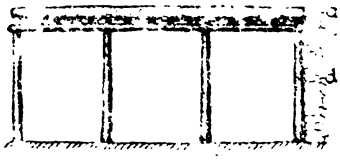


Fig. I.

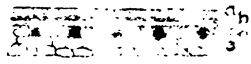


Fig. II.

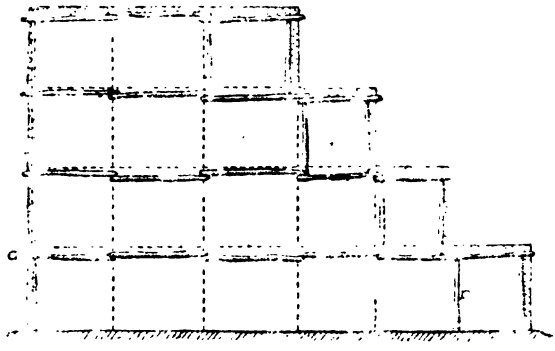


Fig III.

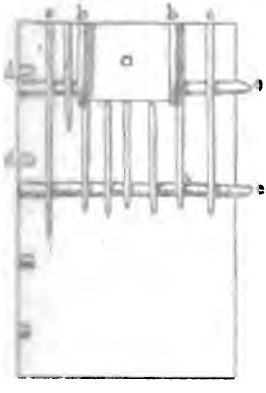


Fig. IV.

splinters seem to have been obtained by splitting a middle-sized tree, and tearing out thin segments.

Pl. III., Fig. 4, is a ground plan of the floor of room marked *I* on the diagram. This room is on the eastern row of the third floor, therefore an outer room.

c, longitudinal poles.

d, the end of the transverse beams projecting from the other room.

e, the transverse beams, resting in the wall on both sides.

On the latter rested a thin layer of brush and a compact mass of clay, 0.20 m. — 8 in. — thick. The clay, or rather soil, is very hard and was probably stamped or pounded.

As far as I have been able to detect, the upright posts are not found inside of the house, except, perhaps, on the rear wall of the outer chamber, as in one room of building *A*, to which I shall hereafter refer. If this is the room, then the skeleton of the wood-work (upright and transverse posts and beams) would present nearly the appearance shown in Pl. III., Fig. 3, when viewed from the side, and admitting the house to be four stories high.

a, horizontal beams.

b, upright posts, along the western wall, and in the three upper stories. These posts are hypothetical, and therefore only indicated by dotted lines. (It may be also that every cell had its front and its rear posts, but I have not been able to detect any except in the outer rooms.)

With the exception of one chamber in building *A*, I nowhere met anything like a roof. This one appears to be nothing else than a ceiling-floor, but of nearly 0.75 m. — 2 ft. 6 in. — in thickness. It is, as Pl. VIII. shows, much covered by fallen stones, and its original height may have been increased by *débris;* but at all events it was thoroughly impermeable, and such as would be required in a climate

where, indeed, it seldom rains, but "whenever it rains it pours."

There is a certain air of sameness cast over the entire structure which has strongly impressed me with the thought that not only was it used as a dwelling for a large number (as the reports, indeed, establish), but also that all its inhabitants lived on an equal footing, — as far as accommodations for living were concerned. There are no special quarters, no spacious halls. The few rooms of somewhat larger size are naturally explained by the mode of construction, adapting the house to the configuration of the rock, and not conversely as we do. It was, therefore, a large joint-tenement structure, harboring, perhaps, when fully occupied, several hundreds of families.

In regard to ingress and egress, not only have I found no doors in any fragments of exterior walls, but the many persons I have asked have always assured me that there had been none, that the house was entered by means of ladders, ascending to the top of each story in succession, and descending into the rooms also by ladders and through trap-doors in the roofs. They have also assured me that each room of each story communicated with the one above and below, also by means of trap-doors and ladders. It is quite certain that there are no staircases nor steps, and that consequently ladders were used, in the same manner as they are still used by the Indians of the pueblos of Zuñi, Moqui, Acoma, Taos, and others. Ingress and egress, therefore, must have taken place, not horizontally "in and out," but vertically "up and down." I have not been able to identify any one of the trap-doors referred to, but I should not be surprised to hear that they have been subsequently found in the north-west corner of each room. By referring to the diagram of the floor (Pl. III., Fig. 4), it will be seen that the rectangular spaces between the beams and overlying poles are almost everywhere large

enough, if the superstructure of splinters (or brush) and clay is removed, to give passage to any man. The ladders themselves have completely disappeared.

On one and the same floor, I found in the side walls at a few places, the remains of low and narrow openings through which a man might pass in a stooping position and "sidling." Nowhere could I see the full height of these small doorways, so that I do not know whether there was a lintel, or whether they terminated in an open angle, like the doorways of Yucatan. (I have seen openings showing the peculiar so-called "aboriginal arch" of Yucatan on a small scale, and I also have seen that an accidental "knocking-out" of one or two stones from the walls produced a hole or gap very similar in shape to the doorways at Uxmal and other pueblos of Southern Mexico, though of course on a small scale. It is self-evident that, the coincidence being accidental, I do not place any stress upon it in view of "tracing relationships." The coincidence is of ethnological, and not of ethnographical, value. As far as I could ascertain, they were certainly 1 m. — 3 ft. 3 in. — high, whereas their average width may have been 0.45 m. — 18 in. (Those I measured averaged between 0.42 m. and 0.48 m. — 16 in. and 19 in.) Their appearance is shown in Pl. II., Fig. 5.

a is what might be termed a door-sill, a smooth oval stone, evidently from the drift, probably dioritic, at all events a dark-green hornblende rock. In the present instance one was not long enough to fill the gap left between the walls, and two were superposed. I saw no traces of wooden lintels or sills. These doorways appeared to be generally about 0.50 m. — 20 in. — above the floor, but if we deduct 0.20 m. — 8 in. — for the clay (measure having been taken from the timbers), 0.30 m. — 12 in. — will remain as their approximate height over the chambers.

The few doors that I could observe are all in the longitudinal walls, and none of them in the transverse; that is, they all open from east to west. But not all the longitudinal partitions have doorways. It cannot, therefore, be admitted that every transverse row was occupied by one family, still less that the family apartments were arranged longitudinally. I rather suspect that this arrangement was vertical, or perhaps vertical and transverse. This surmise is given, however, for what it may be worth. Windows I could not find, although small apertures undoubtedly existed in all the outer walls, both for light and for air.

The chambers being all very much ruined, the lower ones filled with the stones and decayed ruins of the superposed stories, — of these stories themselves but part of the walls, denuded and often twisted, remaining, — I have not been able, with one single exception, to secure or even see any of what we would call the "furniture." Small fragments of grinding-stones (*metates*) are sparsely scattered over the entire ruins, otherwise the only object of daily use as articles of furniture met with by me has been a hearth, which I found or dug out *in situ*, in room *I*, and which, complete, forms part of the collections sent by me to Cambridge.

The place where this hearth was situated is marked on the diagram in room *I*. It stood on the floor against the north wall, and is composed of three plates of stone, originally ground and polished (as the specimen found in building *A* will show, which is a fragment only), and, judging from new fragments found, of diorite or other hornblende rock. There are three plates, — a basal one, 40 m. — 16 in. — long and 20 m. — 8 in. — wide, and two sides, placed vertically east and west of the base, — all three resting against the north wall of the room. Pl. III., Fig. 4, is a diagram of the room, the floor timbers, and the hearth.

The basal plate was covered with 0.10 m. — 4 in. — of very white ashes, which I have also secured, and the rear of the hearth, which is formed by the original "first coat" of earth daubed over the wall, is thoroughly baked by the heat produced in front of it, as the samples sent will show.[1]

Of course, I looked at once for an opening where the smoke arising from the hearth, etc., could have escaped. I am sorry to say, however, that I utterly failed in finding anything like a chimney, — not only in *B*, but in all the other buildings. Still, in the ruined condition of the place, this is no proof of their non-existence.[2]

I will refer to subsequent pages to such articles of mechanical use and of wearing apparel which I was fortunate enough to meet. I shall also return hereafter to the almost omnipresent pieces of painted pottery, of two distinct kinds, and to the very numerous chips of obsidian, jet-black on the face, but transparent as smoky glass; of black lava; and to the flint, jasper, and moss-agates, broken mechanically by man, and scattered over the premises. These premises have been thoroughly ransacked by visitors, and every striking object has already been carried off. I had heard mentioned, among such samples, flint, agate, and obsidian arrow-heads, stone hatchets and hammers, and copper (not brass or iron) rings used for ornamental purposes,[3] but my luck it was not to find

[1] Compare Castañeda, *Voyage de Cibola*, ii. cap. iv. pp. 171, 172. "There is a piece reserved for the kitchen, and another one for to grind the corn. This last one is apart; in it is found an oven and three stones sealed in masonry." Simpson, *Journal*, etc., p. 62, description of a fireplace.

[2] Simpson, p. 62, *Fireplace and Smoke-escape at the Pueblo of Santo Domingo.* The vent was directly over the hearth. I expect to visit Santo Domingo shortly.

[3] Mr. Thomas Munn found about the church a stone hatchet, a fragment of a stone pipe (?), and many arrow-heads. These he kindly promised to me, even authorizing me to get them at the place where he had deposited them, and which lay on the line of my daily tramp to the ruins. Unfortunately, when I reached the place, the objects were already gone.

Mrs. Kozlowski informed me that copper rings (bracelets) were of very com-

any. Therefore the harvest is perhaps slim in that respect. It is beyond all doubt that judicious digging among the lower stories of the structures will reveal treasures, — not money, as the tale current among the inhabitants has it, but things of archæological and ethnological value. For such an undertaking I was, as the Institute well knows, not prepared. I attempted to dig, indeed, though quite alone, but soon came to the conclusion that the time consumed in excavating one metre of decayed and crumbling stones and earth would be more satisfactorily employed in other directions; paving the way for the exhaustive labors of better situated archæologists.

I have been very lengthy in my *exposé* of facts and data regarding this particular house *B*, for the simple reason that, as far as the principles of architecture, based upon a knowledge and want of "how to live," are concerned, it is typical of the rest. Many details become therefore unnecessary in subsequent descriptions.

To return to the structure itself, its general plan and its mode of construction in detail more and more forcibly remind me of an extraordinarily large honeycomb. The various walls, a few of the outer walls excepted, have little strength in themselves (as the rapid decay shows), but combined altogether they oppose to any outside pressure an immense amount of "inertia." There is not in the whole building one single evidence of any great progress in mechanics. Everything done and built with-

mon occurrence among the ruins. Her statement was fully confirmed by Sr. Baca and others. She also spoke of "the heads of little idols" having been plentiful at one time. Gaspar Castaño de la Sosa, *Memoria del Descubrimiento*, etc., *Documentos Inéditos*, vol. xv. p. 244, speaking of a pueblo which is evidently Pecos, says: "Porque tiene muchos ídolos que atras nos olvidaba de declarar." Antonio de Espejo, *El Viaje que hizo . . .* in Hackluyt's *Voyages, Navigations, and Discoveries of the English Nation*, 1600 A. D., pp. 457–464. A somewhat abbreviated and frequently unreliable copy of Espejo's letter, dated "Sant Salvador de la Nueva-España, 23 April, 1584," mentions a district two days east from Bernalillo, inhabited by pueblo Indians: "Los quales tienen y adoran ídolos."

in it can be built and made with the use of a good or fair eyesight only, and the implements and arts of what was formerly called the "stone age." This does not exclude the possibility that they had made a certain advance in mechanical agencies. They may have had the plummet, or even the square; but such expedients, applied to their system of building, might at most have hastened the rapidity of construction. Necessary they were not at all, still less indispensable. As the bee builds one cell alongside of the other and above the other, — the norm of one and the "habitat" impelling the norm of those above and alongside, — so the Indians of Pecos aggregated their cells according to their wants and the increase of their numbers; their inside accommodations, the wood-work, bearing the last trace of the frail "lodge" of a former shifting condition.

Leaving *B* for the present, I turn to the other ruins on the so-called "neck" of the *mesilla.*

4 m. — 13 ft. — west of the N.W. corner of the northern annex, I struck stone foundations indicating a structure (whether enclosure or building I do not venture to tell) 10.21 m. — 33 ft. — from E. to W., and 6.60 m. — 22 ft. — from N. to S.[1] 49 m. — 160 ft. — to the north-west of its north-easterly angle there is a mound about 2 m. or 6 ft. in diameter, thence 20 m. — 65 ft. — further N.W. or N.N.W. the southern ruins of the east wing of *A* are reached.

Parallel to *B*, longitudinally, and at an average distance of 28 m. — 90 ft. — to the west from it, there is a row of detached buildings or structures, of which only the foundations and shapeless stone heaps indicating the corners remain. Pl. I., Fig. 8, conveys an idea of their position and size. The walls are reduced to mere foundations, or to heaps in the corners;

[1] On first sight this building appears circular, but I soon became satisfied that it was a rectangle.

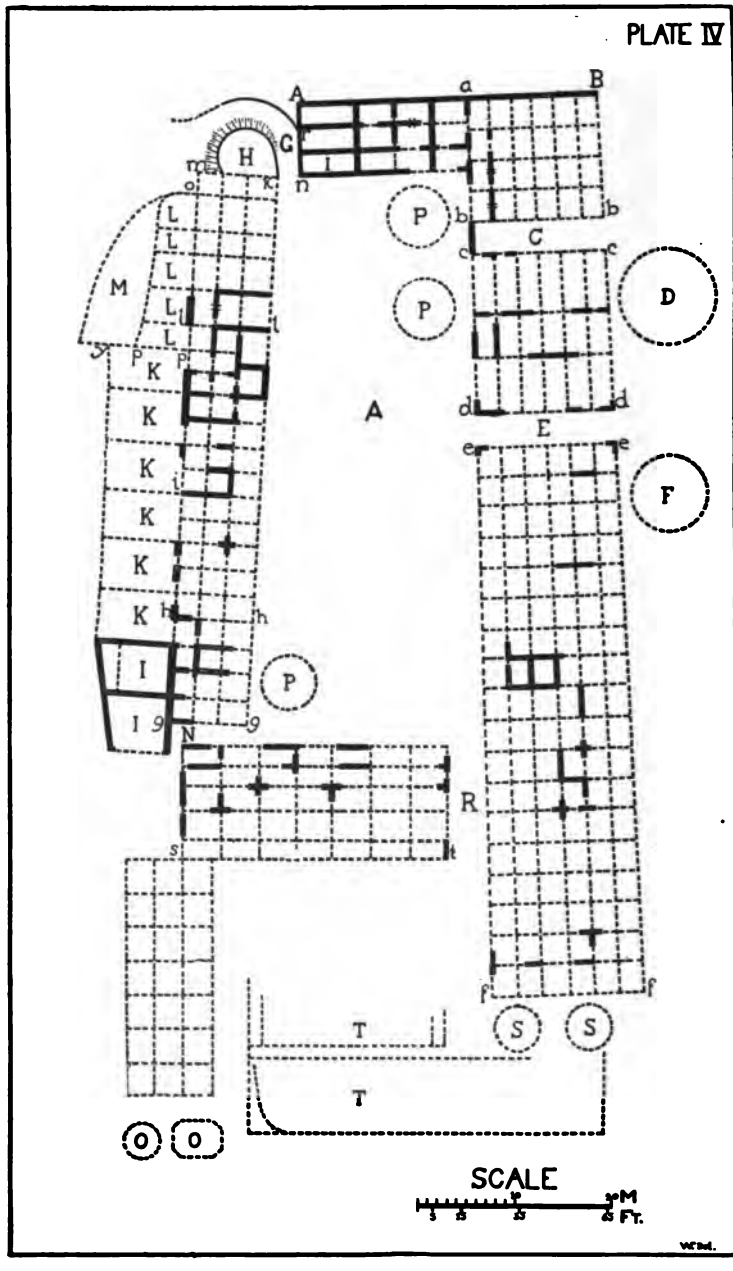
but these remnants indicate that the rocks used were similar in kind and shape to those composing the walls of all the other kinds of construction in the *mesilla* north of the church.

For what purpose these buildings were erected, and in what relation they stood to *B*, I am unable to determine. Some of them appeared to have doors opening to the east.[1] Beyond *f* the ground rises suddenly. The floor of those structures is, in some instances, formed of a black or red loam. I excavated one of those, or, rather, dug into it, to the depth of one metre. The surface had shown traces of a fire built in the centre, and I found also, at the depth of nearly two feet, that the dark soil was traversed by a band of charcoal, fragments of burnt and blackened pottery, and some splinters of bone. Below it the soil was dark red. Whether there was a buried hearth at that depth, or whether the traces of fire were due to an original destruction of woodwork through combustion, the *débris* subsequently covering them with clay, I am unable to judge.[2] In all of them, of course, pottery and obsidian were found.

I have already stated that the *mesilla* dips to the southwest; that there is a depression along the northern end of its "neck;" and that from *f* the rocks bulge upwards again. All this contributes to concentrate the drainage of the entire cliff-top, as far north of the church as it was inhabited, in the hollow where the gate of the general enclosure is placed. This gate was therefore not only a passage-way, but also the water-gap or channel through which the *mesilla* was finally drained into the bottoms of the Arroyo de Pecos.

[1] They may have been the "almacenas," or granaries (storage-rooms), of which I speak further on. "Outhouses" are referred to by Castañeda. (Part ii. cap. iv. p. 172.)

[2] One or the other may also have been an Estufa, for I saw no round structures about *B*. Castañeda (part ii. cap. iv. p. 169) says: "There are square and round ones." It is true that the Estufas are usually in the courts; but when there was no court, as in this case, there could be no Estufa inside.



PLAN OF BUILDING A.

20 m. — 65 ft. — to the N.N.W. of the mound *i*, there rises before us the huge pile of ruins which, on the plat as well as on the diagram, I have designated by *A*. It crowns the highest point of the entire *mesilla*, and covers the greatest portion of its top. In ruins like *B*, its general aspect is yet somewhat different. Instead of forming, like the latter, a narrow, solid rectangle of 140 m. × 20 m. — 460 ft. × 65 ft. —, the building *A* is (taking, of course, the outlines of the entire *débris*) a broad hollow rectangle of 150 m. × 75 m. — 490 ft. × 245 ft. Its interior is occupied by a vast court or square, containing three circular depressions, and surrounded on all four sides by the broad ruined heaps of the former dwellings. On the east side, between the circumvallation and the eastern line of the structure, there are two more circular depressions similar to those within the court. The latter is entered by four passage-ways, — one on the S. E. corner, 4 m. — 13 ft. — wide and about 12 m. — 40 ft. — long from S. to N.; one through the eastern wing, 3.40 m. — 11 ft. — wide and about 14 m. — 46 ft. — long from E. to W.; one in the N.W. corner and another from the S.W., both 2 m. — 6 ft. 6 in. — across. I have designated these four gateways respectively as *R*, *E*, *G*, and *N*. *R* and *E* enter straight through the wall; *G* forms a semicircle almost from W. through N. to S.; *N* describes a right angle from S. by N. to E. The distribution of decay in this house is the same as in *B*, — the southern parts are on all sides almost totally obliterated; the N.W. corner is very nearly perfect; the northern and western walls are tolerably fairly preserved; but the eastern outline of the east wing, the southern outline of the south wing, and the southern ends of both east and west have almost completely disappeared under hills of rubbish, a few posts alone assisting the explorer. The path of destruction has in both buildings lain in the same direction, — from S.S.E. to N.N.W., — and across both its effects have decreased from

south to north. Still, while the similarity in that respect is astonishing, and while there are apparently more walls in *A* standing than in *B*, there is, owing to the very uneven surface of the rock upon which it is built, much more confusion among the ruins of the former than among those of the latter. *B* is built on a gradual slope or ridge; *A* caps a generally convex surface, scooped out in the middle, and sloping eastward.[1] Hence comes the division of the whole structure into four separate and distinct buildings, and hence, also, the complicated manner in which the whole or each part is ruined, even walls still standing being twisted out of shape and out of position. Actual measurements were much less efficacious here than in *B*; and, although I have worked with not less zeal and conscientiousness, the result in neatness and precision is certainly less satisfactory. This explanation will, I hope, induce subsequent explorers to look up my inaccuracies and correct them.

It is needless, of course, to detail the methods of work. They are on a larger scale, and in more tedious ways, a repetition of the proceedings in the case of B. The results are as follows, starting from the line *f f* northwards: The space comprised between the corners (*e, e, f, f*) forms a rectangle, containing 18 longitudinal rows of 6 rooms each. These rows are all on the same level, except the most easterly one, which lies on the slope. The cells, as far as measured and still measurable, appear to be of the same size in length, namely, 2.87 m. — 9 ft. 6 in., — and their widths are respectively from W. to E., or 2.83 m., 2.00 m., 3.14 m., 2.70 m., 2.53 m., and 2.53 m. — 9 ft., 6 ft. 6 in., 10 ft., 9 ft., 8 ft., and 8 ft. The whole area is therefore 51.66 m. × 15.73 m. — 170 ft. × 51 ft. Still, I believe that a sensible narrowing (possibly of nearly 2.0 m. — 6 ft. 6 in. —) may have taken place up to *e e*; but this is com-

[1] Pl. I., Fig. 5, shows cross-sections of the "body" of the *mesilla* on which *A* stands, along the lines indicated. The surface of *A* was therefore very irregular and difficult to build upon for people who could not remove and fit the hard rock.

pensated by the strengthening of the corners, which there are rounded outwards, so that the line *e e* presents about the same length as *f f*. Thereupon follows the open passage *E*, which is 3.40 m. — 11 ft. wide, and north of it a rectangle of 3 longitudinal rows of 3 apartments, *two* of which rows are on the eastern slope. The width of the rooms appears to be the same as that in the former section, whereas their length from N. to S. is respectively 6.10 m., 4.27 m., and 5.44 m. — 20 ft., 14 ft., and 18 ft. It is therefore a rectangle of 15.81 m. × 15.73 m. — 51 ft. × 51 ft. North of it is an open space marked C, 3.13 m. — 10 ft. — wide, in which I could detect no longitudinal partition, except one closing its western outlet towards the court. I have therefore left it an open question, and marked it as an alley or corridor. It may yet prove to have contained six rooms on the ground; but, as this is uncertain, the rooms that may have existed are not included in the computation of cells. North of the line *b b* begins the section *a B b b*, which is very badly ruined. This forms also the north-east angle of the whole building, and whose northern line (*a* B) shows the partitions of six chambers, each 2 m. — 6 ft. 6 in. wide, each one indicating a longitudinal row of 4 rooms, respectively 2.83 m. — 9 ft. — each from N. to S. It would indicate a rectangle of 11.32 m. × 12.00 m. — 37 ft. × 40 ft. Of its six rows of rooms, three are on the slope.

From *a* to A extends the main northern wall of the structure. It is very strong, .78 m. — 2 ft. 6 in. — wide, and constructed as follows, Pl. V., Fig. IX.: —

a, the outer wall, is 0.33 m. — 13 in. — wide.

b, filling of mud, is 0.17 m. — 6 in. — wide (this filling is both earth and gravel).

c, inner wall, is 0.28 m. — 11 in. — wide.

The width of the inner wall being the average thickness of all the other walls in the whole house, the suggestion is not improbable that it was built first, and the outer one, which is

made of larger stones, added subsequently for additional strength, and the interstice filled up as the work rose.

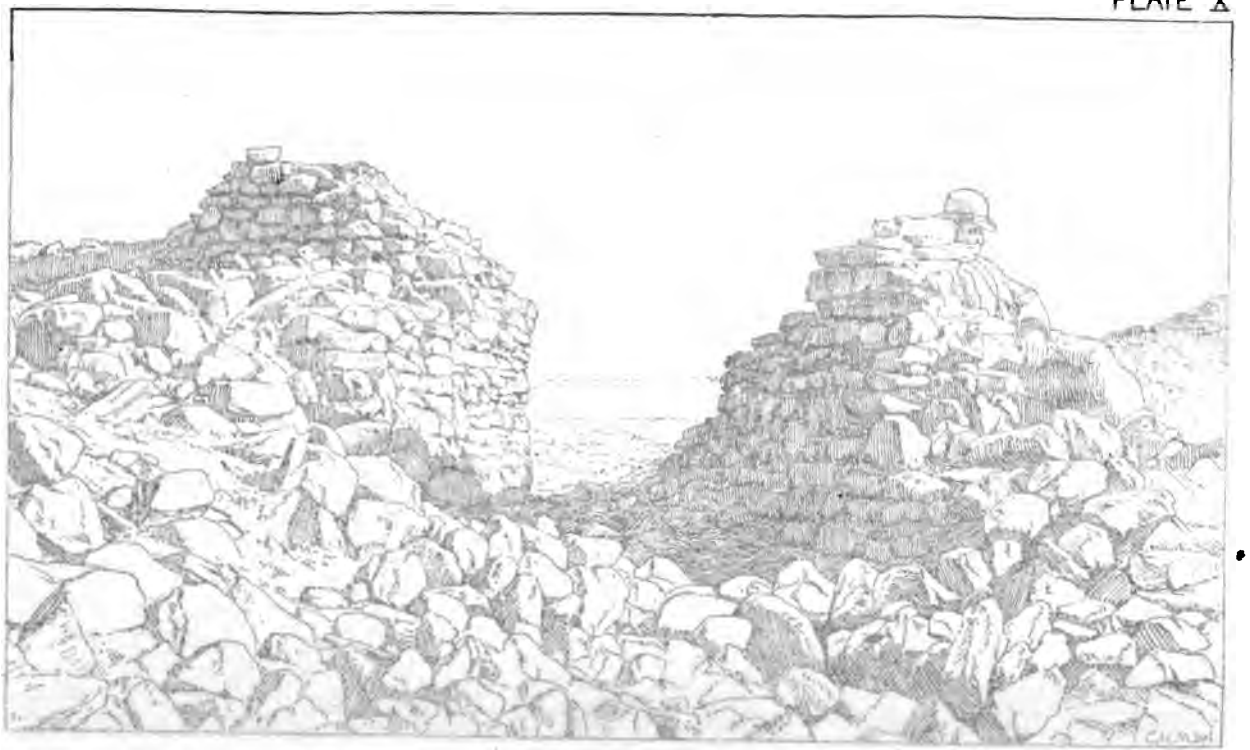
The line *a A* is 17.28 m. — 56 ft. — long. From *A* it runs down to the south for 8.10 m. — 27 ft. —, thence east, 17.28 m. — 56 ft. —, to connect with the north-east corner of the eastern wing. It thus forms an aisle, and at the same time closes the court to the north. A rectangle of 8.10 m. × 17.28 — 27 ft. × 56 ft. — consists of 4 longitudinal sections of 3 rooms each, which, while their length is uniformly 2.70 m. — 9 ft. — (from N. to S.), have widths from W. to E. of 5.46 m., 3.18 m., and 3.62 m. — 18 ft., 10 ft., and 12 ft. All the rooms are on the same level, and they are the largest and best preserved of any in the entire area of ruins. Room *I* has even an unimpaired roof.

The north wall of *a A* stands out boldly on the highest crest of the *mesilla*. Below it northwards, a small hill of stones, from which timbers occasionally protrude, forms a tumbled and confused slope of inextricable ruin; and beyond this slope there extend the foundations of walls on the level *mesilla* up to 10 m. — 33 ft. — from the northern transverse part of the general circumvallation, which there is 45 m. — 148 ft. — from *a A*, and 30 m. — 100 ft. — long from W. to E. It thus appears that the building *A* had its northern annex as well as the house *B*. To this annex I shall hereafter return.

West of line *A n* there runs alongside of it the interesting gateway *G*, 2 m. — 6 ft. 6 in. — wide, its bottom somewhat higher than the floor of the adjoining rooms,[1] and forming, as before stated, the north-westerly entrance to the great inner court. It is perfectly straight on the east as far as *r*; but then a heavy bank of stones and gravel starts out like a lower continuation of the wall *a A*, and winds down, curving, till close to the western circumvallation on the edge of the *mesilla*. It thus forms a northern embankment to the gateway. Almost parallel to it, on

[1] This may have been caused, in part, by filling with rubbish from the surrounding walls.

PLATE X



m of larger stones, added subsequently for ... st ..., and the interstice filled up as the work rose. line ... is 17.28 m. — 56 ft. — long. ... d to the south for 8.10 m. — 27 ft. —, thence east ... — ft. —, to connect with the north-east corner of the ... w It thus forms an alcove, and at the same time ... c to the north. A rectangle of 8.10 m. × ... — ... × ft. — consists of 4 longitudinal sections of 3 rooms ... w ..., while their length is uniformly 2.70 m. — ... N S.), have widths from W. to E. of 5.49 m., ... m. ... 3 — 18 ft., ... ft., and ... ft. All the rooms ... on the ... le and they are the largest and best preserved of any e ... of ruins. Room ... has even an unimpaired ...

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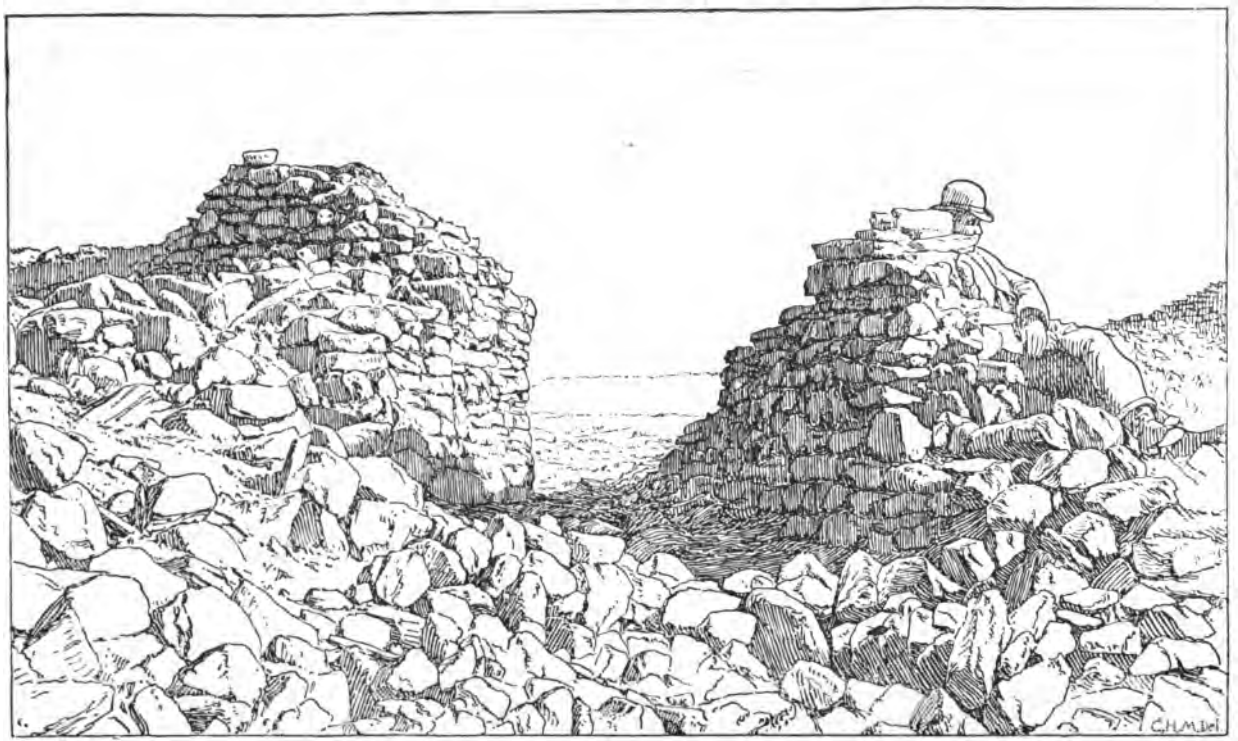
PLATE X



VIEW OF PASSAGE G, BUILDING A, FROM THE NORTH.

the opposite side of *n r*, the conical mound or tower *H* constitutes the western and southern wall of the passage *G*. This passage is therefore nearly semicircular. It is level from *n* to *r*, and thence descends steeply towards the edge of the *mesilla*.

The mound *H* describes about two-thirds of a circle. Its base at the south is 6 m. — 20 ft. — from E. to W.; its diameter, 6.85 m. — 23 ft; its actual height, about 1.5 m. — 5 ft. It is conical, and appears to be a round heap of earth and rocks encased with neat and judicious piling of well-selected stones. This naturally gave the stone-work a slanting surface; the higher it reaches, however, the more it becomes vertical, until at last it juts out above the surface of the mound like a circular breastwork, or a hollow round tower on a conical base. I refer to Pl. X. for an excellent view of its vertical aspect and structure. This mound, or tower, while it commands an extensive view to the west, north, and even north-east, is also the most northerly "spur" of the western wing of the great house *A*. This wing extends in an unbroken length of 62 m. — 203 ft. — from the base line of *H* to the entrance *N*, and is divided into 3 transverse sections, all connected, and all having 3 longitudinal rows of rooms or cells. The width of each cell is the same in every section, to wit, from E. to W. 2.58 m., 2.58 m., and 3.22 m. — 8 ft. 6 in., 8 ft. 6 in., and 10 ft. 6 in., respectively.

Section *k l l m* has 3 × 5 apartments; in length from N. to S., 2.51 m., 3.86 m., 2.35 m., 3.71 m., and 3.72 m. — 8 ft., 13 ft., 8 ft., 12 ft., and 12 ft. It was therefore 16.15 m. × 8.38 m. — 53 ft. × 27 ft. Probably all the ground-floor cells were on the same level.

Section *l l h h* has 3 × 12 apartments, each 2.53 m. — 8 ft. — long. Consequently, it was a rectangle of 30.36 m. × 8.38 m. — 100 ft. × 27 ft. The eastern row of chambers was on the slope.

Section *h h N* 3 × 4 long, respectively 2.77 m. — 9 ft. —

each, therefore 10.98 m. × 8.38 m. — 36 ft. × 27 ft. There were two eastern rows on the slope.

This entire wing (forming a rectangle of 62 m. × 8.38 m. — 203 ft. × 27 ft., if we add to the spaces given the thicknesses of the transverse partitions, this time not included in the measures) has given me more trouble than the rest of *A* and *B* combined. Nowhere are the walls so twisted and out of range as here. Besides, there is an unfinished air about it that is almost bewildering. The height of the stories does not agree with that of the other sections, — the western wing would be one story lower. Furthermore, it contains in several places squared beams of wood inserted in the stone-work lengthwise. These beams (of which there is also one in the opposite wing similarly embedded) are identical and apparently of the same age with the (not sculptured) beams still found in and about the old church. Entire walls of chambers, or rather sides, appear to be new; the mud or adobe is fresh, whereas almost everywhere else it has disappeared, out of the crevices even; the stones are almost laid in courses. As I shall hereafter relate, there are at several places adobe walls, the adobe containing wheat-straw! And all this right among chambers showing sides as uncouth and old as any of the pueblo, though still as high as their more recent and better preserved neighbors. Here there is evidently patchwork of later date, and patchwork executed with material unknown to the Indians previous to the advent of the Spaniards. I am even convinced that it was done after 1680; for the beams evidently came from the church or the convent, which buildings we know were sacked and fired by the Indians in the month of August of that year. If this conclusion be correct, the south-western part of *A*, its entire westerly wall, was somehow destroyed after 1680, and partly rebuilt with materials unknown to the Indians at the time when Pecos was first erected.

I say partly, because there is evidence that the western wing, from *H* to *N*, was originally much broader. As it now appears, the wall *m h* presents itself as the western line of the structure. But there are, still further out, although distinctly connected with it, remains of buildings which were at least attached to it. These are the ruined enclosures designated on the ground-plan by *I*, *K*, and *L*.

Nothing besides foundations, heaps of stones defining corners, and upright posts protruding along the western limits of *L* and *K* inside, remain of these structures. *L L* are of the size of the ordinary chambers; *K K* are four times larger. Their interior shows no partition whatever: the soil is level, somewhat depressed in the centre of each apartment; and on the whole they present very much the same appearance as those structures on the "neck," which lie to the west of *B*, but are not connected with the latter. Besides, the enclosures are on a lower level than the two rows of rooms immediately east of the wall *m N*. This wall itself is a double wall, each single one being of the size of the ordinary partition; the total width is therefore 0.56 m. — 22 in., — as proven by actual measurement. The idea is therefore suggested — very naturally — that the entire western wing of the building *A* was originally a double house,[1] terraced both towards the east and the west. In sketching the cross-sections, I have taken due notice of this very probable, if not positive, fact.

The double wall *m N* shows no trace of lateral passages. It therefore divides the whole structure from *H* to *N* into two longitudinal sections. The western one, from *o* to *p*, consisted of but one row of 5 rooms; from *p* to *N* it had two rows of 16

[1] Such double houses are mentioned by Castañeda (part ii. cap. v. p. 177). Speaking of "Cicuyé," he says: "Those houses fronting outwards ('du coté de la campagne') are backed up ('adossées') against those which stand towards the court."

chambers each. The ground slopes still further to the S. and S.W. outside of the trapezoidal enclosures, *I I*, and is covered with *débris;* so that I presume that, from *l l* to *N*, there was an additional row of 3 rooms on the outside. The entire division was at one time very completely razed to the ground, so that its owners never attempted to rebuild it after the original plan.

The western division was also badly damaged in its southern half, but the damage was subsequently repaired with the aid of material and mechanical arts postdating the Spanish conquest of New Mexico. Pl. V., Fig. 3, gives a view of the western end, along the line *h h*.

I would recall here the fact already noticed, that the northern part of building *B* is also mended in places with adobes of the same make as those used in repairing the western wing of *A*, and that, while the squared beams are wanting, the stonework there in places appears also of a more recent date. The suggestion may therefore not be uncalled for, that the same destroying power which spent its main force on *A*, distinct from the general decay, and moving in a direction from S.W. to N.E., reflected or glanced off upon the northern portions of *B*. This question will, however, be discussed hereafter.

The annexes *I I* are trapezoidal enclosures of stone-work as high as a man's breast, and respectively of the sizes indicated on the ground-plan. The northern one is divided lengthwise into two compartments; the southern is open to the south. Both appear to be new and unfinished. From the centre of the last one protrude two well-squared heavy timbers. These timbers are in a singularly unfit position; they cannot be accounted for, and convey the impression that they were carried hither from some other totally different construction. They look almost forlorn. Whence they came, and for what purpose they were brought, — what was the object in erecting the enclosures *I I*, — I do not intend to speculate

upon, unless they are recently constructed store-rooms ("Almacenas").

Across the passage-way *N*, both southward from the line *g g* and eastward from *I*, fitting into it to the east and barring access to the great court from the "neck," lies the south wing of *A*, — a rectangle of 27.25 m. — 90 ft. — from W. to E., and 13 m. — 43 ft. — from N. to S., including the walls. It is much decayed and overturned; the northern side is far less so than the southern; nowhere are there any signs of repairs. Here the rows of rooms must be taken transversely (from W. to E.). There are 5, each with 7 chambers, measuring in succession from N. to S. 2.00 m., 2.00 m., 3.09 m., 2.40 m., and 2.00 m. — 6 ft. 6 in., 6 ft. 6 in., 10 ft., 8 ft., and 6 ft. 6 in; and from W. to E. 3.61 m. — 12 ft. each. Two of these transverse rows appear to be on the southern slope, and three on the upper level towards the court.

Here I have again reached the passage-way *R*, my original point of departure. Before entering into an examination of the other particulars of the building, as well as of its annexes and surroundings, I shall make once more a rapid circuit, to give an idea of its size, and also attempt a rude computation of the number of rooms it contained.

Lengths of the eastern wing from *f* to *B* (E. side N. and S.).	51.66 m. — 170 ft.	
	3.40 m. — 12 ft.	
	15.81 m. — 52 ft.	
	3.13 m. — 10 ft.	
	11.32 m. — 37 ft.	
	7.84 m. — 25 ft.	
Adding 28 walls à 0.28 m. — 11 in., total.		93.16 m. — 306 ft.

Brought forward		93.16 m. — 306 ft.
Lengths of the north side from *B* to *a* .	12.00 m. — 40 ft.	
from *a* to *A* . . .	17.28 m. — 57 ft.	
6 transverse walls à .28 m. — 11 in. . . .	1.68 m. — 6 ft.	
		30.96 m. — 102 ft.
Length from *A* to *n* .	8.10 m. — 27 ft.	
n to *m*	8.38 m. — 27 ft.	
m to *o*	2.51 m. — 8 ft.	
o to W. corner of *L* (estimated) . .	5.00 m. — 16 ft.	
W. corner of *L* to *p*	16.17 m. — 53 ft.	
p to *y*	2.10 m. — 7 ft.	
y, southward, to line *g g*	33.44 m. — 110 ft.	
passage-way N . .	2.00 m. — 6 ft. 6 in.	
Width of western section of W. wing (about)	7.48 m. — 25 ft.	
Length of south wing	13.00 m. — 43 ft.	
28 transverse walls à .28 m. — 11 in.. .	7.84 m. — 26 ft.	
		106.02 m. — 348 ft. 6 in.
Width of S. wing . .	27.25 m. — 90 ft.	
Passage *R*	4.00 m. — 13 ft.	
From *R* to *f* (about) .	4.00 m. — 13 ft.	
Line *f f*	15.73 m. — 52 ft.	
8 longitudinal walls à .28 m. — 11 in.. .	2.24 m. — 7 ft.	
Total length to *f*, my point of departure		53.22 m. — 175 ft.
Entire length of circuit of building *A*		283.36 m. — 928 ft.

Adding to this 15 m. — 49 ft. — for the probable periphery of mound *H*, and 64 m. — 210 ft. — for the perimeter of a

southern annex to the south wing, which I have not yet described, we reach a perimeter of 362 m. — 1,190 ft. — in all. Comparing these figures with those given about the great ruins of the Rio Chaco by Dr. W. H. Jackson,[1] and of the pueblo of Las Animas River by my friend the Hon. L. H. Morgan,[2] it will be seen that this building, *A*, at Pecos is probably the largest aboriginal structure of stone within the United States so far described, and that it will even bear comparison with many of the aboriginal ruins of Mexico and Central America.[3]

[1] The dimensions given by Gen. J. H. Simpson, *Reconnoissance*, etc., pp. 79–82, of the pueblos — "Pintado," "Bonito," and "Peñasca blanca" — on the Rio Chaco vary, as far as the circuit is concerned, between 1,200 and 1,700 feet, "about." Dr. W. H. Jackson, *Geographical Survey*, etc., 1876, has measured these ruins, and gives the following dimensions: "Pueblo Bonito," 544 × 314; "Peñasca blanca," 499 × 363 (only 3 sides of the rectangle being built up); "Pueblo Pintado" (2 sides), 238 × 174; "Pueblo Alto" (3 wings), 360 × 200 and 170. "Pueblo Bonito" therefore alone comes up to the standard of Pecos. The latter, however, is larger still, as, by adding to the perimeter given that of the northern annex (about 90 m. — 295 ft.), we obtain a total of 450 metres, or 1,480 feet. The difference, if any, is not considerable; and I merely advert to the fact to show that the old ruins of New Mexico, comparatively neglected, are fully as important in size as any of those further north, besides being completely identical in plan, structure, and material. Furthermore, the pottery is identical. This was already recognized in 1776 by Father Silvestre Velez Escalante, *Diario y Derrotero de los Nuevos Descubrimientos de Tierras á Rumbos N. N. Oe. Oe. del Nuevo México*, MSS. at the Library of Congress, fol. 118, on the San Buenaventura (Green River), and in his letter, dated Santa Fé, 2 April, 1778, *Documentos para la Historia de México*, 3a série, vol. i. p. 124.

[2] *On the Ruins of an Ancient Stone Pueblo on the Animas River*, Peabody Reports, 11 and 12.

[3] I must here call attention to a singular coincidence. Among the ruins of Uxmal in Yucatan there are, aside from the "Teocalli," or medicine mound, two general forms of structure, — one narrow rectangle like *B*, and hollow rectangles like *A*. The "Casa del Gobernador" would correspond to the former, and the "Casa de las Monjas" to the latter. Of course, there is dissimilarity between the house of the "Governor" and *B*, in so far as the former contains halls and the latter but cells. Still the fact is interesting that, whereas the great northern pueblos have each but one house alone, here, for the south, we have already two buildings within one and the same enclosure, similar in form and size to those of Central America. I call attention to this fact, though well remembering at the

The size of the interior court can now be easily determined. It is 64 m. — 210 ft. — from N. to S., and 19.28 m. — 63 ft. — from E. to W. Its area covers therefore 1,235 sq. m. — 13,230 sq. ft., — or about one fourth of an acre; whereas the entire *débris*, measured as well as possible, scatter over more than two acres of ground.

For the computation of the number of rooms in the whole pile, cross-sections are necessary. (Pl. V., Figs. 1–8.) The height of each story is about the same as in *B*, to wit, 2.28 m. — 7 ft. 6 in.

Fig. 1, section of west wing about *l l*, from west to east.

Fig. 2, lines *b b* and *a B*.

Fig. 3, section of west wing along *h h*.

Fig. 4, line *d d*, north, up to south line of *C*.

Fig. 5, section of west wing along line *g g*.

Fig. 6, line *f f*, southern boundary of east wing, and for the entire rectangle up to *E*.

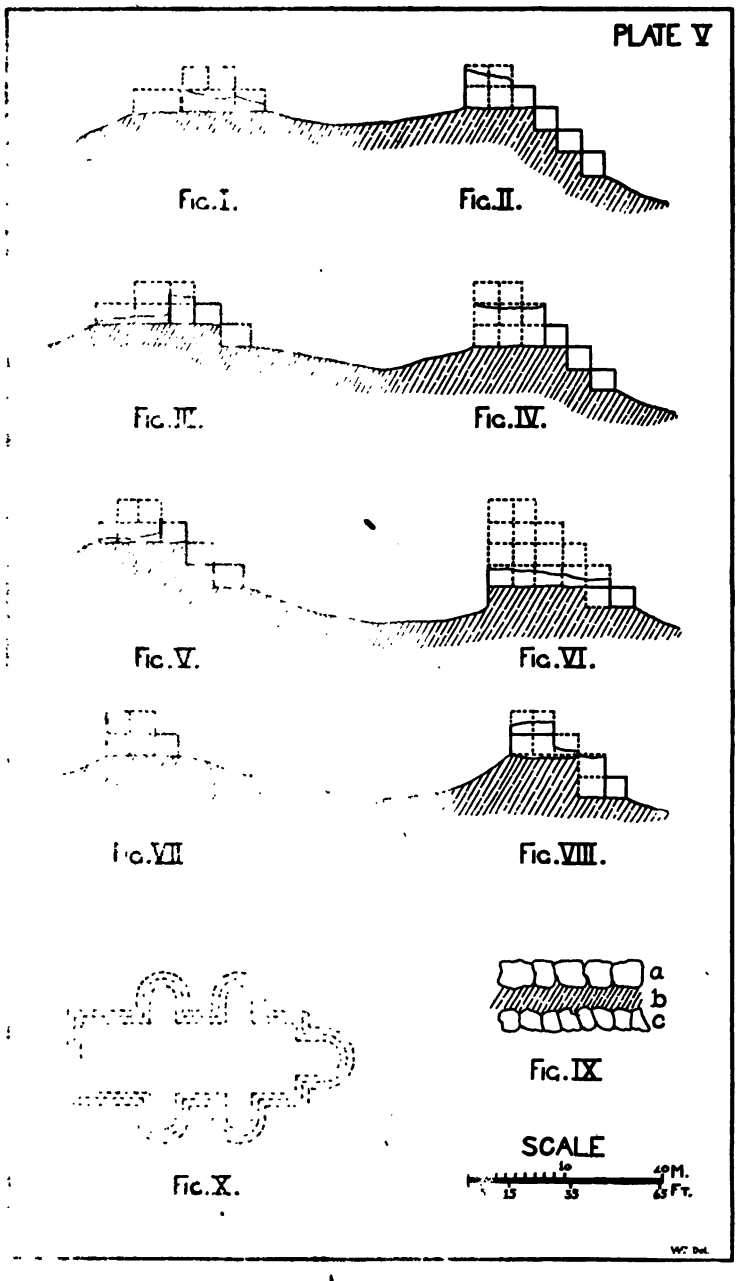
Fig. 7, cross-section of north wing, line *A n*, from north to south.

Fig. 8, south wing, from north to south.

It is possible that the second row, from S. to N., had two superposed chambers, but I am not positive of it, and therefore do not include it in the computation of rooms which will follow.

It will be seen that, according to the ground plan and sections, the east wing had five stories, the north wing two, the west wing successively two, three, and four, and the south wing four. Looking at the buildings from the great court, the south presented an unbroken front of a two-story wall, the east suc-

same time the friendly advice of Major J. W. Powell, the distinguished chief of the Bureau of Ethnology at Washington, "not to attempt to trace relationships."



SECTIONS OF [illegible] A.

cessively walls of four, three, and two stories; the north side formed two, and the west side, from north to south, in succession, two, three, and four terraces. In this manner, not only was the building remarkably well accommodated to the great irregularities of the surface, but even a tolerably uniform height was attained, well agreeing, therefore, with the description of "Cicuyé," as Castañeda saw it in 1540. "The houses have four stories, terraced roofs all of the same height, along which one can make the circuit of the entire village without meeting any street to intercept the passage.[1] Here we must remember that the widest gateway is 4 m. — 13 ft. — wide, — an expanse easily spanned by common beams used by the Indians in their house architecture.

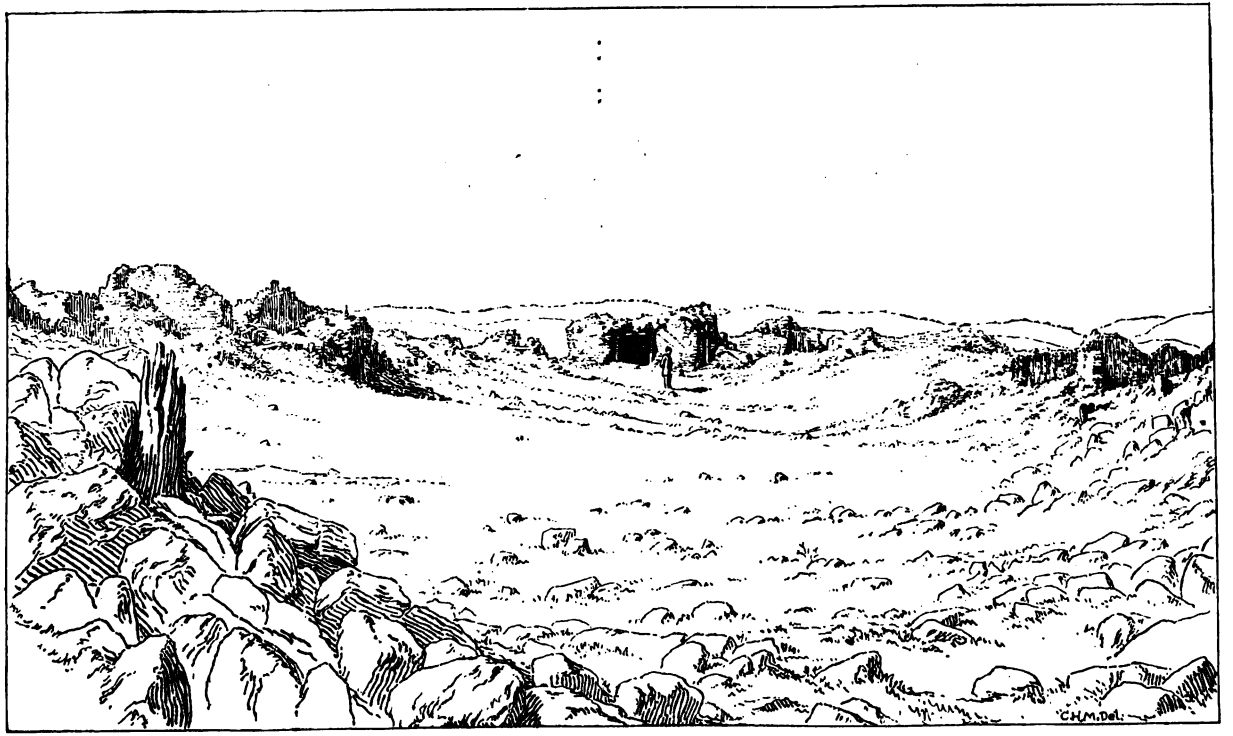
An attempt to compute the number of rooms in *A* results as follows: —

Rectangle *f f e e*, 18 longitudinal rows of 6 rooms and 5 stories.		
1st story	18	
2d story 5 × 18	90	
3d story 4 × 18	72	
4th story 3 × 18	54	
5th story 2 × 18	36	
	—	270 rooms.
(*d d c c*) 1st story and 2d story on the slope, and 3 rooms per row.		
1st story	3	
2d story	3	
3d story 4 × 3	12	
4th story 3 × 3	9	
5th story 2 × 3	6	
	—	33 "
Carried forward		303 rooms.

[1] *Relation du Voyage de Cibola*, ii. cap. v. p. 176.

Brought forward			303 rooms.
(*b b a B*) 6 rows of 4 rooms, and 3 stories on the slope.			
1st, 2d, and 3d story, each 4 . . .	12		
4th story 3 × 4	12		
5th story 2 × 4	8		
	—	32	„
(North wing) 2 stories, easily computed as . . .		20	„
(*k m l l*) 1st story 5 × 4	20		
2d story 5 × 2	10		
	—	30	„
(*l l h h K*) Lowest story	12		
2d story 12 × 4	48		
3d story 12 × 2	24		
	—	84	„
(*h h K g g I*) Lowest story	4		
2d story	4		
3d story 4 × 4	16		
4th story 4 × 2	8		
	—	32	„
(South wing) From E. to W.			
Lowest story	7		
2d story	7		
3d story 7 × 3	21		
4th story 7 × 2	14		
	—	49	„
Adding for the southern annex a probable number of		35	„
Building *A* contained in all not less than		585	cells.

Turning now to the inside of the building itself, I am compelled to acknowledge here an important omission in my survey of *B*. It relates to the vertical connection of the walls. They are all, with few exceptions, as far as their dilapidated condition admits of observation, continuous from bottom to top; that is, the sides were everywhere carried up above the ceiling (or floor), and then, after the beams had been embedded in the stones, another wall was piled up on it as straight



INTERIOR OF BUILDING A, FROM THE SOUTH.

as possible. In this manner it became possible to add each cell separately.

There are several doors visible in *A*, as marked on the ground-plan. Those in the eastern and western wings open from east to west, those in the northern wing from north to south; therefore transversely to the length of each structure. But I have also seen longitudinal walls without passages. The tops of the doors are all gone; the rest is everywhere similar to the sample found in *B*, and already figured. In some cases even the sills are gone. Windows I could not find, nor trap-doors or ladders; there was no trace of steps, and, unfortunately, no clew to any chimney or vent. Of furniture I secured pieces of new hearth-stones; of other articles, broken "metates," part of a fine maul of stone, flint chips, celts, stone skin-scrapers, and, of course, painted pottery and obsidian. But not one specimen is entire; every striking implement, etc., has been carried off by amateurs, of whose presence besides, broken beer bottles, with the inscription "Anheuser-Busch Brewing Co., St. Louis, Mo.," give occasional notice.

Room *I*, in the S.W. corner of the north wing is very well preserved; so well, indeed, that it is nearly certain that there was no entrance to it from above. On the contrary, the entrance appears to have been from the front, as shown in Pl. VIII., where this room stands in full view. It is perfectly plain inside; eight posts of wood, round, and stripped of all bark, support the ceiling and roof, whose composition I have elsewhere described. These posts (which are also shown in Pl. VIII.) are so distributed as to have one in each corner, and two between, on each longer side of the room. In the S.E. quarter of the ceiling the splinters covering the rafters or poles are removed, and fresh straw (or rather very well preserved) protrudes, as having formed a layer with the brush. I was at first inclined to take it for wheat-straw, but other

parties insisted that it was mountain grass. For the latter it appears to be very long, and it has a marked head. I have not, as yet, seen any wheat-plants grown at these elevations.[1]

Otherwise this chamber appears nearly perfect. In the middle of the north wall a hole is knocked out, but the two coats of plaster (dark and white) are almost everywhere preserved. Great interest attaches to this apartment, from the fact that, according to Sr. Mariano Ruiz, the sacred embers ("braza") were kept here until 1840, in which year the five last remaining families of Pecos Indians removed to their cognates at Jemez, and the "sacred fire" disappeared with them. Sr. Ruiz is good authority on that point, since, as a member of the tribe[2] ("hijo del pueblo"), he was asked to perform his duty by attending to the embers one year. He refused, for reasons which I shall hereafter state. The facts — that the fire was kept in a sort of closed oven, and that the front opening existed — made it unnecessary to search for any other conduit for smoke and ventilation. The fire was kept covered, and not permitted to flame.

I now come to one of the most interesting features of the court, — the three circular depressions marked *P* on the diagram. Two of them are in the N.E. corner, — the northern one close to the northern wing, and the other 2.65 m. — 9 ft. — to the S.S.E. of it. Both are perfect circles, and each has a diameter of 7.70 m. — 25 ft. In the S.W. corner, near to the passage *N*, is the third, with a diameter of only 6 m. — 20 ft. They look like shallow basins, encased by a rim of stone-work piled up in the usual way, and forming a wall of nearly 0.35

[1] I am informed by Governor Wallace, and have permission to quote him, that these elevated plateaux grow exceedingly tall wheat, rye, and oats. He has seen oats whose stalks were 6 feet long and 1¾ inches in diameter. The heads were proportionally large.

[2] He became adopted, as I am told, from being, as a boy, assistant to the sacristan of the church of Pecos.

m. — 14 in. — in thickness. This wall is sunk into the ground, but at the northern basin it certainly, as former excavations plainly show, did not reach the depth of 1 metre; and it appears that at about that depth there were flat stones laid, like a rough stone floor. These basins were the "Estufas," or council chambers, where, as late as 1840, the meetings of the poor remnants of the tribe were still held. Although an adopted son of Pecos, Sr. Ruiz was never permitted to enter the Estufa. Across the northern one a very large and very old tree, nearly 0.75 m. — 2 ft. 6 in. — in diameter, is lying obliquely. Its thick end is towards the N.E. wall. It looks as if uprooted and fallen upon the ruins. But how could a tree of such dimensions ever have grown there? Again, for what purpose, and how, could the Indians of Pecos have carried it hither?

Outside of the building *A*, the narrow ledge separating its rubbish from the eastern wall of circumvallation, a rim 150 m. — 192 ft. — long by 32 m. — 105 ft. — wide at the south, and 12 m. — 40 ft. — at the north, shows the basins *D* and *F*, respectively 10 m. — 33 ft. — and 8 m. — 26 ft. — in diameter. They hug the rock of the *mesilla* very closely, and look completely like the estufas in the court. These buildings, according to Sr. Epifanio Vigil, of Santa Fé, were barns or store-houses (round towers 10 to 11 feet high), in which the Indians preserved their gathered crops, forage, etc. Still, it is not unlikely that they were tanks, built for collecting rain-water.

On the south side of the eastern wing, and so close to it that the heaps of rubbish touch, are two circular depressions surrounded by large masses of stones. They are marked *S S* on the plan. Their shape and size cannot be accurately determined, and their object is unknown.

Nearly the same must be said of a rectangular space, dotted

and intersected with foundations and upright beams marked *T T*, and lying out in front of the south wing on the denuded and thinly soiled apron forming the southern spur of the "body" of the *mesilla*. Its eastern line, a double stone wall sunk 0.50 m. — 20 in. — into the soil, is 8 m. — 26 ft. — long from N. to S. From its southern extremity similar foundations run to the west 37 m. — 120 ft., — thence 8 m. — 26 ft. — north, and 37 m. — 120 ft. — east back to the first line. Thus a rectangle of 8 m. × 37 m. — 26 ft. × 120 ft. — is formed, within whose area, especially in the western portion, upright beams start up in something like a semicircle, which would indicate that the structure was once a building. A metre and a half to the north, a foundation wall runs about 20 m. — 66 ft. — E. and W.; and at both of its extremities a corridor ascends towards the south wing of *A*. The nature and object of these fabrics are equally a mystery to me.

Attached to the S.W. corner of the south wing is the annex of which I have already spoken. It is an elevated rectangle of 24 m. × 9 m. — 80 ft. × 30 ft., and is clearly divided into compartments of 3½ m. × 3 m. — 12 ft. × 11 ft. The whole is not much more than a stone mound of oblong shape, but it contained on its ground-plan 21 chambers. I presume, from the mass of *débris*, that it had an upper story. Its eastern row of cells is a direct continuation of the most westerly row of the S. wing. Due south of this annex, and almost touching it, there are two structures marked *O O* which are very remarkable. They are octagonal. The most easterly one is best preserved, and appears to be the largest. Its two lateral walls are each 4 m. — 13 ft. — long, the transverse 5.34 m. — 18 ft., — and the corners are cut off sharply by intersections of 0.86 m. — 3 ft. — in length, so as to give the whole eight sides. The walls are well defined; the corners sharp and still one metre high. They are of the usual thickness.

The other structure is so ruined that it appears round. These buildings, according to Sr. Vigil, were store-houses also; and they favor the suspicion that those marked *S S* south of the east wing had the same shape. As they now appear, they look like the ruins of octagonal towers. The stone-work is like that of the estufas, but they are erected exclusively above the ground, and still cannot have been very high.

I have now reached the utmost south-westerly point of ruins on the "body," where its drainage leads us into the often-mentioned depression and to the broad gateway of the circumvallation. From this gate the enclosure-wall creeps up along the edge of the *mesilla* N.W. and N., in all 104 m. — 340 ft., — to a point 44 m. — 144 ft. — due west of the S.W. corner of the annex; and here we find a distinct stone enclosure 27 m. — 89 ft. — long from N. to S., and 15 m. — 50 ft. — wide, with an entrance of 3 m. — 10 ft. wide, and terminating at the circumvallation. North-east of this, and about 28 m. — 92 ft. — west of *i* on the middle wall of western wing, another enclosure begins 20 m. × 8 m. — 66 ft. × 26 ft.; and 3 m. — 10 ft. — south of this a small ruin 10 m. × 8 m. — 33 ft. × 26 ft. Adjacent to *L L*, etc., around from *o* to *y*, a curved enclosure of stone extends, 42 m. — 140 ft. — long, and thence east 6 m. — 20 ft. — back to the N.W. corner of *K*. It appears like a garden, or corral, and shows no partitions. These are, as far as I could see, all the remains west of the building *A*. The edge of the *mesilla* rounds into the north-western corner of the latter, almost closing up with it; the slope is very steep and covered with huge rocks, broken and tumbled down along the declivity.

The small northern plateau between the transverse circumvallation and the top-wall of *A* is therefore nearly shut out from communication to the S.W. This plateau is a trapezium 45 m. — 148 ft. — long from N. to S., — 50 m. — 164 ft.

— wide on the S., and 30 m. — 98 ft. — on the N. It holds but few ruins; but, among these, a valuable find was made a short time ago by Mr. Harry Dent, of Baughls.

These ruins, in the main, can be described as follows: The slope descending from the top-wall is a heap of rubbish with shrivelled posts of wood, impossible to disentangle without excavations. North of this *débris*, and 29 m. — 95 ft. — from *A a B*, stands a knoll, or mound, covered with stones. Looking south from this, I thought I noticed that it stood in the line of the second row of chambers of the east wing of *A*, counting from E. to W.; and retracing my steps in that direction I found, indeed, traces of stone foundations disappearing under the great *débris*, which indicated a corridor, or perhaps series of rooms, about 2 m. — 6 ft. 6 in. — wide. It therefore looked like a northern annex to *A*. From the mound, which I have designated by *V* (Pl. I., Fig 5), other foundations radiate to the W. and N.W. Those west soon disappear, but to the N.W. they are plainly visible for 14 m. — 46 ft. — to another mound, or knoll *T*, similar to the first, whence another line of foundations vanishes to the west also. This appears to be the utmost limit of structures north, except the wall of enclosure, from which to *T* on the south is about 10 m. — 33 ft. About the N.W. corner of *A* large heaps of rubbish descend in shapeless terraces outside and merge into the slope of the *mesilla*. They are, like the entire slope itself, covered with fragmentary pottery. About their eastern declivity, also, I thought I saw foundations, but could not be sure whether or not they connected with those extending westward from the two mounds just mentioned.

In the eastern section of mound *V*, Mr. Dent has, as I was informed and saw, dug down one metre into the dark loamy clay and stones of which the knoll is composed, and has thus exposed a small stone chamber, or flue, walled in to the north,

west, and south in the ordinary manner, and closed with earth, etc., at the east. Whether there was any stone top other than rocks heaped up above the hillock I could not learn; neither did I, in digging down further, find any floor. This chimney-like structure is 1.32 m. — 3 ft. 8 in. — wide from E. to W., and 0.70 m. — 2 ft. 3 in. — from N. to S. It is therefore too large for a chimney, or flue, and too small for a room. Out of it Mr. Dent, whom I could not find personally, as he was absent at the time, extracted a human skeleton and much fairly preserved pottery. Of course, I was unable to see what he carried off (among which was the skull), but I saw and dug further in the same excavation, removing out of it bone splinters and the best preserved pottery piece of the entire collection. They are, in part, very similar to the yellow bowls still made by the Indian pueblo of Nambé (a Tehua tribe); but many of them have been so charred and blackened that it is impossible to make out their color. The pottery is all thin. Among it were also bits of charcoal and of rotten wood. The structure therefore appears to have been a grave, in which the body was placed in a sitting posture with its face to the east. Subsequent information and discovery have fully confirmed this view. I shall return to this on a subsequent page, and only state here that my efforts to find another skeleton in the same location failed.

The aboriginal remains encircled by the great wall of circumvallation and north of the old church are now exhausted, so far as my work among them goes, and the surroundings of the *mesilla* shall therefore become the subject of report.

The slope towards the east and south-east is rocky on the top, covered with sandy soil growing *grama* and very few cedar bushes, studded with ant-hills, and devoid of all remains of human structures so far as I could see. Pottery and obsidian are ever present, but become perceptibly less and

almost disappear further east. The rills which drain the eastern slope carry much of this broken stuff into a small arroyo that winds to the left of the *mesilla*. About one quarter of a mile east of the building *A*, on a bare sunny and grassy level, are, quite alone, the foundations of a singular ruin. They run N. and S., consist of three rows of stones laid aside of each other longitudinally, and have the shape shown in Pl. V., Fig. 10.

Its length from N. to S. is 25 m. — 82 ft., — and its width about 10 m. — 33 ft. From its form I suspect it to have been a Christian chapel, erected, or perhaps only in process of erection, before 1680. Not only is it completely razed, but even the material of the superstructure seems to have been carried off. Stones are scattered about the premises, but I found neither obsidian nor pottery. It stands protected from the north by the extremely rocky ledge terminating the *mesilla* towards the east, and appears without the least connection with the Indian pueblo proper.

It is the almost circular bottom on the west of the *mesilla*, encompassed by the north rock of *A* to the north, by the whole length of the *mesilla* to the east, by the gradual expanse below the church on the south, and by the Arroyo de Pecos on the west, that contains the aboriginal remains. Much better than a description, a diagram will illustrate their extent and shape. Pl I., Fig. 5.

The distances are not very correctly given, and the shape of *F* is slightly exaggerated in irregularity.

A and *B* being the respective large buildings, *C* the church, *D* the great gate of the circumvallation; *E* is a stone or rubble wall of undeterminable length running along the foot of the mesilla in a slight curve till near the "wash-out" sallying from the gate, and *F* is an irregular lozenge, or trapeze, enclosed by a heavy low stone or rubble wall which might in

some places be called an embankment. The corner *l* is 50 m. — 165 ft. — from the border of the creek-bottom, which there is cut off abruptly from 1 m. to 3 m. — 3 ft. 3 in. to 10 ft., — presenting a section of red clay and gravel with pottery fragments. The line *l r m* runs W.N.W. to E.S.E., and is 138 m. — 452 ft. — long; the line *m s n* measures 121 m. — 398 ft., — *n o p* 146 m. — 480 ft., and *p l* 100 m. — 330 ft. From *r* to *s* an embankment of earth and stone runs almost in a circle, and the whole triangle *r m s* forms a slightly elevated platform, in the centre of which is a pond (*estanque*) *t*, which, even at the present time, is filled with water. Viewed through the gate from above, this pond appears, with a part of the enclosure, as seen in Pl. IX. Several gullies (*barrancas*) have cut through the western and southern parts of the enclosure.

This enclosed area, now covered with tufts of grama, occasional cactuses, knolls and scattered drift and pottery, was according to Sr. Ruiz, the former *huerto del pueblo;* that is, the fields of the inhabitants of the pueblo, where they planted and raised Indian corn, beans, calabashes, squash, and, after the advent of the Spaniards, also wheat, melons, and perhaps other fruit. Not a vestige of former cultivation is left; but the platform *r m s*, with a pond in the centre, at once explains their mode of securing the water for irrigation. Through the gateway *D* the drainage of the *mesilla* was conducted directly to the platform *r m s*, where the pond *t* acted as a reservoir, out of which the fields themselves could be very easily and equitably supplied with moisture. Whether this was done by channels radiating from below the curve *r s* over the area *F*, or by carrying the water, I cannot tell, neither my informants nor the appearance of the area giving any clew. But I could not escape being forcibly struck by this plain and still very forcible illustration of communal living. Not only did the

Pecos Indians live together, and build their houses together, but they raised their crops in one common field (though divided into individual or rather family plots, according to Ruiz), irrigated from one common water source which gathered its contents of moisture from the inhabited surface of the pueblo grounds. "The lands," said Mariano Ruiz, "belong to the tribe, but each man can sell his own crops." ("Las tierras son del pueblo, pero cada uno puede vender sus cosechas.") It forcibly recalls the system of "distribution and tenure of lands" among the ancient Mexicans.

I now cross the Arroyo de Pecos, and on its western bank, in the triangle formed by the creek with the military road to Santa Fé, nearly opposite the site of the old church, I met with a ruined enclosure and with remains of structures whose purposes are yet unexplained to me.

The distance from *M* to the arroyo is 40 m. — 130 ft. Its E. line is 75 m. — 246 ft., — the S. line 70 m. — 230 ft., — the W., up to where the curve begins, 55 m. — 180 ft. The distance from *M* to *N* is 15 m. — 50 ft. At the north end of *N* is a mound of stone and *débris*, like a conical tower, 5 m. — 16 ft. — in diameter; the other lines are distinct foundations only. Both *M* and *N* are scattered over with broken pottery, chips of obsidian and flint, and I also found a fragment of a stone implement.

Mariano Ruiz told me that the enclosure *M* was the corral of the pueblo; that is, the enclosure where they kept whatever herds they possessed. It was at all events but an enclosure, and no building. Still, why were their herds, their most valuable property, kept on the opposite side of the creek, so far from the dwellings themselves?

There are other ruins yet further south on the western bank of the arroyo, which, however, I shall not mention here. They are so important as to deserve special discussion in a later

portion of this report. I therefore cross the creek back again to its eastern shore, and thence to the south side of the old church, proceeding thence southwards. From the church a grassy slope, very gentle and with almost imperceptible undulations, extends to the road which runs almost due W. and E. from the creek towards the Rio Pecos. The distance is about 300 m. — 1,000 ft., — of which 74 m. — 240 ft. — are taken up by the embankments, walls, and foundation lines already described as pertaining to the church building. Plate I. shows the position of this section, its northern limit being about 34 m. — 112 ft. — N. of the southern lines of the church annexes (or 42 m. — 138 ft. — S. of the temple itself) the southern limit being the road itself, while on the west the creek-bed forms the boundary.

H, Corral-like structure, very plain, about 50 m. × 20 m., or 163 ft. × 65 ft. I understood Sr. Ruiz to say that it was the garden of the church ("la huerta de la iglesia"), but believe that he probably meant *G*, not having my field-notes with me at the time.

I, rectangle of foundation lines 30 m. — 98 ft. — from *A*; 30 m. × 31 m. — 98 ft. × 100 ft. — divided into 2 compartments, the western one 9 m. × 30 m. — 30 ft. × 98 ft.

J, trapezium, with mound at S.W. corner 18 m. × 21 m., or 60 ft. × 70 ft.

K, rectangle 25 m. × 36 m. — 82 ft. × 118 ft. — open to the west, and only recognizable from the semicircular mound of not 0.50 m. — 20 in. — elevation, dotted out as leaving a depression in the centre.

L, circular depression 36 m. — 118 ft. — in diameter; ground always wet.

O, circular mound 10 m. — 33 ft. — in diameter, 1.5 m. — 5 ft. — high.

k, shapeless mound, possibly part of a hollow rectangle.

In many cases the foundations (which are the only remains visible) are themselves obliterated, — or at least overgrown. They are sometimes of 0.27 m. — 10 in. — in width; again, two rows, even three rows, of stones compose them longitudinally. The mound is regular, but the soil is everywhere so hard and gravelly that I desisted from excavating. The basin *L* looks much like an estufa: there are few scattered stones on its surface, and this surface is moist; but I did not notice any trace of stone encasement. In general, there is no rubbish at all over the area. Stones are scattered about, and evidently they were once used for building purposes; but they nowhere form heaps. Then there is not the slightest trace of pottery or obsidian. In this respect the area just described forms a remarkable exception. All around it in every direction the painted fragments cover the soil; this particular locality, as far as I could find, has none. It only reappears in *I*, opposite the church annexes, and also in the enclosure *H*, whereas the church grounds are again strewn with handsome pieces, and some of the finest obsidian flakes were found on them.

Across the road to the south, the ground becomes covered with shrubs of cedar, and the eastern slope hugs the creek-bed. Upon reaching the creek, the road divides, — one branch crossing over directly to the west, and the other proceeding along the arroyo about 200 m. — 630 ft. — to the south ere it turns across. The main military line of travel intersects thereabout the one to the Pecos River, and thence, striking almost due south, forms a very acute angle with the creek. In this angle ledges of rock protrude, sheltered by a fine group of cedar-shrubs; and here, in what may be termed a snug little corner, the rocks bear some Indian carvings.

Expecting daily a supply of paper for "squeezes," I have until now deferred taking any exact copies of these vestiges.

Therefore this report contains but superficial notice of them. It would have been useless labor to make sketches and take measurements when I knew that, within the period of time I shall spend in New Mexico, I should certainly be able to secure fac-similes. The carvings are certainly old; they are much worn, and represent mainly so-called footprints (of adults as well as of children), turkey tracks, a human form, and a circle formed by small cup-shaped holes, of the patterns about which I hope that my friend Professor C. C. Rau, of Washington, will by this time have finished his elaborate and very interesting work. The human figure is as rude and childlike an effort as any represented on the plates accompanying the reports of General Simpson and of my friend Mr. W. H. Holmes; the footmarks are fair, and the circle is rather perfect. Something like a "diamond" appears within its periphery, but I am not yet quite certain whether it is a carving or the result of decay. Some of the tracks seem to point to the high mesa, others to the north.[1] By the side of these original ef-

[1] It was Mr. John D. McRae who, together with Mr. Thomas Munn, led me to this spot. Subsequently the former, who has been for nearly twenty years among the northern Indians (in Canada and Oregon), gave me some valuable information in regard to their sign-language. He affirms that it is very highly developed and extensively practised by them; that tribes of entirely different stock-languages can converse with each other freely; and that he was himself present at one time when the Crees and the Blackfeet arranged for a pitched fight on the day to follow, the parley consisting almost exclusively of signs. Thus, killing is indicated by the spanning of a bow and the motion of throwing down; walking, by shoving both hands forwards successively, etc.; the time of day is very correctly given by describing an arc from E. to W. (facing S.) up to the point where the sun stands at the specified hour. These signs are not new to my distinguished friend, Lieutenant-Colonel G. Mallery, to whom science owes the gift of this new branch of inquiry, but still they are interesting to those who may be less familiar with it. In regard to connection of this "sign-language" and Indian "pictography," Mr. McRae has told me the following: Whenever an Indian breaks up his camp, and wishes to leave behind him information in what direction and how far he is going, he plants into the ground near the fire a twig or stick, and breaks it so that it forms an acute angle, planting the other end in the ground also in the direction in which he intends to camp the following evening. The follow-

forts there are recent additions, destined, perhaps, to become at some future time as successful archæological frauds as many of the most interesting products of excavation in the States of Ohio and Iowa. About the sculptured stones I again met with fragments of painted pottery. Still further down, on the east bank of the Arroyo de Pecos, about a mile from the church in a southerly direction, and on a low promontory of red clay jutting out into the creek-bed, there are vestiges of other ruins, — a low, flat mound covered with stones. I saw no pottery about it.

Directly opposite the sculptured rocks, on the other bank of the arroyo to the west, the cliffs of clay bordering it form a huge cauldron, out of which the contents seem to have been originally removed, leaving a semicircle of vertical bluffs of clay and drift about 3 m. — 10 ft. — high. It is out of this locality that I suggested the clay for the adobe of the church

ing would very well give the appearance of this little mark, assuming the Indian to travel from N. to S.: —

If he intends to go S. for three days it will look thus: —

Fractional days are indicated by corresponding shorter limbs. If his direction is first S. and then E., this would be a top view of the bent twig, assuming that he travels two days S. and three days W.: —

The connection between this expedient and sign-language, knowing that, as Dr. W. J. Hoffmann, of Washington City, has informed me, the sign for "lodge" is an imitation of the tent, — that is, holding both hands up and the tips of the fingers together at a steep angle, — becomes very apparent. Through it pictography is easily reached.

might have been secured. The faces of the slope cannot have been washed out, for the creek runs straight far to the east, hugging closely that side of its banks; there is no trace of an old stream-bed winding to the westward, neither is there any sufficient drainage from the west in the shape of gulches or branches. It appears as if there had been an original start, at least, given to the present basin by a removal of earth in a curve, subsequent wearing and weakening enlarging the cauldron to its actual form and size. This size is constantly increased by decay and by the work of diggers; for this bluff has been of late a favorite resort for them, from the fact that in its face human bones — nay, complete graves — have been found.

I consequently started to examine the bluff, and finally noticed a plain wall jutting out at about one fourth of the length of the western curve from N. to S. This wall seemed at first to be a corner. It is well made, and its stone-work is much like that figured by Mr. Holmes from the cliff-dwellings on the Rio Mancos in South-western Colorado. Still the stones are not hewn, but only were carefully broken, the rock itself having a tabular cleavage. The surface is true. I am unable to say whether it was a corner or not; the thickness of the side (east) is 0.65 m. — 2 ft., — and it looks like a strong outside line running almost due N. and S., perhaps a little to the E.

The height of the wall is 0.94 m. — 3 ft.; its depth beneath the surface, 0.52 m. — 21 in. The sod (covered with grama) looks undisturbed; it is hard and coarsely sandy on the top, but beneath the clay is softer and loamy. Under the wall there is red clay to the bottom of the bluff with bands of drift. Clambering along the cliff to the northward, I soon perceived, at a depth nearly agreeing with the base of the wall, a layer of white ashes, similar to those found over the hearthstone in building *B*, mixed with charcoal and charred pottery. This

layer was continuous along the exposure of the bluff; it formed a regular seam, intersected horizontally by bands of charcoal, and, at the lower end, a continuous stratum of pottery totally different from that found hitherto, except one fragment in the drift of the creek and another one among the adobe rubbish of the church. Instead of being painted, it was corrugated and indented, and identical with the corrugated and indented ware from the Rio Mancos and from South-eastern Utah, so beautifully figured by Mr. W. H. Holmes. There were also a very few pieces of painted pottery: but these, which became more numerous towards the top of the bluff, or cliff, appeared to have been washed in; whereas the corrugated fragments were a distinct, continuous band, most of the convex surfaces being downwards; and this band, except where ledges of the cliff projected far out into the bottom, or where the clay had tumbled down recently in front of the exposure, was visible from 50 m. — 165 ft. — N. of the wall to 62 m. — 203 ft. — S. of it on a line of 110 m. — 360 ft. It was everywhere accompanied by the ashes and charcoal.

A, little barranca, exposing ashes, etc., which contained corncobs, and, in the upper parts of the clay, human bones.

a, grave found by Mr. E. K. Walters, of Pecos; obliterated now.

B, wall.

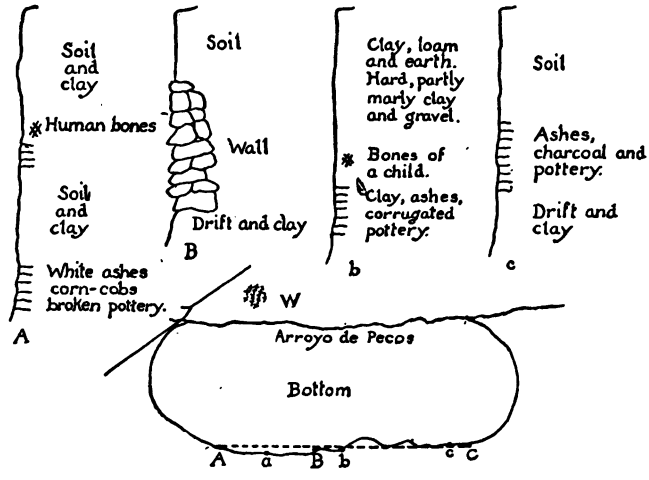
b, place where skeleton of child was partly secured, five metres S. of *B*.

C, southern barranca; no remains found.

c, last sign south of pottery, ashes, and charcoal.

W, rock carvings on west bank of the arroyo.

The following are sections at four different places: —



Specimens of every section have been sent with the collection. It has struck me that the stratum of ashes, charcoal, and pottery, while visible always inside, — that is, to the west of a supposed lateral extension of the wall from *B*, — still appears to run below it. The human remains, however, protrude about at heights where the wall, if in existence, might have been in front of them. There were bones lying on rubbish in front of *C*, — there were also bones within the ashes, even at *A*; but the action of wear and washing being everywhere visible and very complicated, I do not venture any surmise in these cases beyond, expressing the conviction that the human remains originally rested above the layers of charcoal, ashes, corn-cobs, and corrugated pottery.

While at Sr. Ruiz's, I had diligently inquired of the old gentleman about the graves of the Pecos Indians. He finally replied (after he had for a time insisted upon it that they were at the church) that before they became Christians ("antes que fuéron cristianos") they buried their dead on the right bank of

the Arroyo de Pecos, where he had often seen the skeletons (las calaveras, the corpses) washed out of the cliffs and strewn about. At Mrs. Kozlowski's, this also appeared to be a known fact; but an examination of the creek banks showed no trace of bones, and showed no other structures except the mound already mentioned on the left shore. In the cliffs of the basin which I have now described I met with the first sign of what Sr. Ruiz called "El Campo-Santo de los Indios, antes que fuéron Cristianos." Still it is not at all positive, because the surface of the level west of the bluff shows extensive but flat and low mounds, covered with stones used for building, and with painted pottery, showing that at least adjoining the human remains a very large building, if not several, had stood at some very remote time. The wall would then stand towards that ancient structure in the same relation as the mound or chamber *V* stands towards the ruin *A* on the *mesilla;* and it would indicate the custom on the part of their inhabitants of burying their dead around their houses, or at least in sight of the rising sun, and in little chambers of stone. This view is corroborated by the statement of Mr. E. K. Walters, of Pecos, that at a place which I have marked *a* (therefore to the north of the wall) he dug out, very near the edge of the bluff, a stone grave, and with it a human skeleton. The grave was a rectangle, walled up on four sides, with stones on the top and no floor. The western side was rounded, so as to present the following plan: —

In it lay the skeleton, two feet below the soil, the feet pointing eastward. The length of the chamber was about one third of a large man's body; the head lay at the west end, amongst the bones of the chest. It had therefore been buried in a sit-

ting posture facing the rising sun.[1] Along with the body arrow-heads were found, and pieces of tanned deerskin, such as are still worn by the Indians. Of course, all traces of the skull, etc., have since disappeared.

While this conversation was taking place, the partner of Mr. Walters, Sr. Juan Basa y Salazar, came in, and the question of the great bell (which I have already mentioned) came up for discussion. All the parties assured me that this bell formerly belonged to the church of Pecos, and that after the outbreak of 1680 the Indians carried it up into their winter pueblo, on the top of the high mesa, where it broke and they left it. The positive assertion that the winter pueblo of the Pecos tribe was about 2,000 feet higher than the great ruins on the *mesilla* — that these ruins themselves were but their summer houses — was very startling. It appeared incredible that the Indians should have left their comfortable quarters in the coldest season to look for shelter in the highest and coldest places of the whole region. Still, my informants being old residents and candid men, with certainly no intention to deceive me, and there being besides confused reports of the existence of ruins on the mesa current among the people of the valley, I resolved to devote my last day to a rapid reconnoissance of the elevated plateau. Therefore, after a visit to the Plaza de Pecos, on the 5th of September, where the Rev. Father Léon Mailluchet confirmed the reports about the winter houses on the mesa, I set out (always on foot) on the morning of the 6th, Mr. Thomas Munn having volunteered to be my guide.

[1] Sr. E. Vigil has just informed me that the notion is current that all the Indians of the New Mexican pueblos buried their dead in this manner. Among the Mexicans and the Christianized Indians it is the rule to bury the dead around the church or in sight of it.

We followed the railroad track downwards, and about a mile and a half south of Baughl's, east of the track, met a tolerably large mound. At the station of Kingman, four miles from Baughl's, there is also a ruined stone house, rectangular, but smaller than any one of those on the *mesilla*.[1] I had no time to make any survey. We went along the railroad for one mile farther, then struck to the S.W. across a recently cultivated but abandoned field, and finally reached the apron of gravelly clay and locas skirting the high mesa. Here Mr. Munn assured me were the remains of stone structures all along for miles, and especially stone graves. Of the latter he had seen "hundreds." He described them exactly as Mr. Walters had, and as I had found the pit in mound *V*, and described the position of the skeleton also as if sitting with the face to the east. We soon came to a walled ruin 6 m. × 6 m. or 20 ft. × 20 ft., the walls composed of sandstone, — a range of rubble blocks very much ruined, — a *piñon* having a diameter of 0.45 m. — 18 in. — shooting up from the interior. 50 m. — 165 ft. — further north a clearly defined estufa is seen, 4 m. — 13 ft. — across, with stone walls 1 m. — 3 ft. 3 in. — in width. The apron of the mesa is overgrown with fine pines. Thence, following a tie-shoot, we ascended very nearly vertically, about 1,000 feet at least, to the top. Here already the view to the E. and S. was magnificent; but the air was light and chilly. Thunder-clouds were hovering N. and E., rain-streaks pouring down on the Sierra de Tecolote, and soon a heavy cloud formed south of us, while others were slowly nearing from the N.E. The mesa dips or slants decidedly to the W. and S.W.; the strata on its surface are tilted up to a high pitch, and appear to be almost vertical. The ground is very rocky, covered with high *piñon*.

[1] There is still another ruin much farther down the railroad, near to a place called "El Pueblo." I was informed of its existence, but have not as yet been able to visit it.

Notwithstanding the steadily nearing thunder, we plunged to the S.W., past the tie-camp of Mr. Keno, and soon struck the source of an arroyo in a rocky, desolate hollow, pines shooting up in and around it. There, on its left bank, were the foundations of a stone structure 11 m. × 3 m.—36 ft. × 10 ft. About three miles from the edge of the mesa, in a still wilder *cañada*, where there is no space nor site for any abode around, the bell was found. There is no trace of any "winter house" here,—not even on the entire mesa; and the bell was left there, not because its carriers there remained, but because it dropped there and broke. Who these carriers were I shall discuss further on; at all events, they were not the Indians of Pecos. This *cañada* is the entrance to a gorge descending directly towards the pueblo of Galisteo.[1] Meanwhile the clouds had accumulated over our heads, sharp thunder-claps and icy blasts preceding the storm. It was of short duration, but as the hail fell thickly we were thoroughly pelted and wet before again reaching the camp, glad to enjoy the hospitality and hot coffee of its inmates. At one P.M. the sun shone again, and we started (this time to the north) along the border of the mesa. Vegetation is here more exuberant than in the valley of Pecos. Not only do tall pines grow everywhere, but there is a thick undergrowth of *encina;* the Yucca is large and green, mountain sage covers the soil, and grassy levels are dotted with flowers. Animal life, also, is more vigorous and more varied. Whereas in the valley crows and turkey-buzzards alone enliven the air, and there are scarcely any beetles; up here there is deer and turkey, and the gray wolf; jays and magpies flutter through the thickets, and the horned lizard is met with occasionally. The pith of the

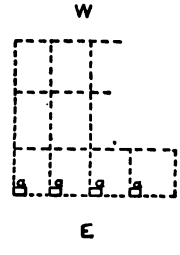
[1] Or rather towards the pueblo of San Cristóval. The latter was the chief place of the Tanos Indians, of which stock there are still a few left at the town of Galisteo.

pine-trees attracts a large species of buprestis, and lepidopteræ are quite common. But there is not the least vestige of former human dwellings, so far as I could see: the top of the mesa of Pecos is, and was, a wilderness. It may have been the hunting-grounds of the tribe even in winter, but as for their exchanging their large pueblo at the bottom for a residence on the top it is very much as if the good people of New York City should spend Christmas week on the Catskill Range, or the Bostonians take winter quarters on Mount Monadnock. We followed the crest of the mesa for nearly four miles, ascending two of its highest tops. They are steep, denuded, and craggy. Beneath them vertical ledges descend in amphitheatres. From the highest point the horizon to the south appears unbounded. Like a small cone, the peak of Bernal seems to guard the lowest end of the Valley of Pecos. Over this vale rain-clouds still cast their shadows, and distant thunder muttered behind the Owl Mountains and the high Sierras in the north. To the west and south-west are almost unlimited expanses of slope, dark green pineries, and grassy spots. The bold outline of the Sandia Mountains looms up stately beyond it. Even the distant Sierra de Jemez protrudes. Between it and the northern limits of the mesa lies, far off, yet, the city of Santa Fé.

The mesa is mostly yellow sandstone, but its highest points are capped with red; therefore the name of "Cerro amarillo" often applied to it. Through a gorge worn in the rock, and on an almost perpendicular "burro-trail," we finally descended to the apron of the plateau, surrounded during our descent by scenery as weird and wild as any of the lower Alps of Switzerland. On the lower edge of the apron, a mile and a half north of Kingman, and half a mile from the railroad track, we struck again several ruins. They were partitioned

rectangles, very similar in size and in condition to the foundations seen south of the old church of Pecos, and, like those, utterly devoid of fragments of pottery. Along their eastern line, and inside of the walls, there appeared little square heaps of stones. These were the graves of which my guide had spoken, and their position is exactly similar to that of those near and at the pueblo itself.[1]

My time was up, however, and I could not stop to explore them. I therefore returned to Baughl's, and thence to Santa Fé, with the firm determination to revisit Pecos at a future day, and then do what I was compelled reluctantly to leave undone this time. Should, in the mean time, some archæologist explore the same locality, correct my errors, and unravel the mysteries hovering about the place, I heartily wish him as much pleasure and quiet enjoyment as I have had during my ten days' work, in which the dream of a life has at last begun its realization. Before, however, turning to the close of my report, which will embody scraps of history gathered about the place, remarks on the customs and arts of its former inhabitants, and general reflections, I must express my thanks here to a few gentlemen not yet named in this "personal narrative." Besides Mr. J. D. C. Thurston, who kindly assisted me for the first two days, Mr. G. C. Bennet, the skilful photographer, of whose ability his work is telling, has been for two days a pleasant and welcome companion. Last, but certainly not least, I thank Mr. John D. McRae, not only for his



[1] The following is an approximate sketch of these structures. This sketch is made without reference to size or plan, merely in order to show the relative position of the graves (*a*, *a*, *a*, *a*). It will be seen that the analogy with the grave of mound *V*, building *A*, is very striking; also with the grave discovered by Mr. Walters, and the wall above the corrugated pottery west of the Arroyo de Pecos.

assistance free of expense to the Institute in many important mechanical matters, but especially for the solicitude with which he has watched my work and looked to my comforts, and for the great store of information I have gathered from his conversation.

HISTORY.

My survey of the grounds occupied by the aboriginal ruins in the valley of the Pecos indicates, as I have already stated, three epochs, successive probably in time, in which they have been occupied by man; that is, I have noticed these, and beyond these I have not been able to go as yet. Subsequent explorers may be more fortunate. This distinction, or rather classification, is very imperfect in the two earlier stages, and even arbitrary; but between the second and the last there is a marked break, — not in time, but in ethnological development. I shall term the three epochs as follows: —

1. Pre-traditional. (Indicated by the presence of the corrugated and indented pottery as its most conspicuous "landmark.")

2. Traditional and documentary. (Documents in the sense of written records.)

3. Documentary period.

THE PRE-TRADITIONAL PERIOD.

I have not been able to detect as yet among the confused traditions current about the pueblo of Pecos any tale concerning occupation of their grounds by human beings prior to the settlement of which the ruins now bear testimony. It is true that the proper traditions of the tribe of Pecos are now preserved only at the pueblo of Jemez, about eighty miles N.W. of Pecos and fifty miles W. of Santa Fé, and that I have not

as yet visited that place.[1] But it must be remembered that I now report "up to date," and that subsequent information will, or at least should, come in time.

My reason for admitting a pre-traditional period is, then, simply that I have found human remains at Pecos older than those of the present ruins and different in kind. These remains, as it may already have been inferred from the "personal narrative," are those found on the west side of the arroyo, in the basin (or rather the bank encircling it) opposite the rock carvings.

One fact is certain, the human bones, the walls protruding from the banks, and the grave found by Mr. E. K. Walters, are all above the layer of white ashes, charcoal, corncobs, and corrugated pottery found as a continuous seam along an extent of over 100 m. — 327 ft. — from N. to S. Consequently, the walls and graves must have been built over these remains of a people which appears to have made indented and corrugated pottery alone, and consequently also the latter must be older in time than the former. It does not appear that the sedentary Indians of New Mexico ever made, within traditional and documentary times, any other than the painted pottery in greater or less degree of perfection. Even Gaspar Castaño de la Sosa, when he made his inroad into New Mexico in 1590, mentions at the first pueblo which he conquered: "They have much pottery, — red, figured, and black, — platters, caskets, salters, bowls. . . . Some of the pottery was glazed."[2] The corrugated and indented pottery, as I am as-

[1] To judge from the report of General Simpson (p. 68), these early traditions must be very meagre. His informant, the celebrated "Hoosta-Nazlé," is now dead. Of the Pecos adults then living at Santo Domingo, a daughter is still alive, and married to an Indian of the latter pueblo. General (then lieutenant) Simpson was at Jemez in 1849.

[2] *Memoria del Descubrimiento*, etc., p. 238. "Tienen mucha loza de los colorados y pintadas y negras, platos, caxetes, saleros, almoficos, xicaras muy galanas, alguna de la loza esta vidriada."

sured by Sr. Vigil, is rarely met with over New Mexico, except at old ruined pueblos, and only when digging (en cavando).[1] I feel, therefore, justified in assuming it to have been the manufactured ware of a people distinct from the Pecos tribe or the pueblo Indians of New Mexico in general, and their predecessors in point of time. This pottery, however, is frequently met with among the cliff dwellings of the Rio Mancos and in Utah.[2] Its relation, then, to the painted pottery has, as far as I know, not yet been investigated.

But what could have been the purpose in covering originally a space of over 100 m. — 327 ft. — in length with the products of combustion and fragments of one and the same industry in such a manner as to form an uninterrupted layer of 0.45 m. — 18 in. — at least in thickness? Those who subsequently buried their dead over the seam certainly did not collect these ashes and spread them there as a floor on which they rested their structures afterwards. The combustion of a large wooden building would not have given the same uniformity on such a large scale. Sr. Vigil has suggested to me the following very plausible explanation: In order to burn or bake their pottery, the present pueblo Indians of New Mexico build large but low hearths on the ground of small wood, sticks, and other inflammable rubbish and refuse, on which they place the newly formed articles, and then set the floor on fire, until the whole is thoroughly burnt. Fragments of broken objects, etc., are not removed. The combustible material is thus reduced to ashes, and the broken pieces remain within them; their convex surfaces, of course, falling outwards, and thus resting on the floor. In this manner a thick layer of

[1] W. H. Holmes, *Geographical Survey*, part iii., p. 404, plate xliv. "This plate is intended to illustrate the corrugated and indented ware. Heretofore specimens of this class have been quite rare, as it is not made by any of the modern tribes."

[2] Holmes, pp. 404, 405.

ashes and charcoal, with pottery, is easily formed. These "hogueras" are still from 20 to 40 feet in diameter; but, as they accommodate themselves to the size of the pueblo, it is certain that they were formerly much larger. The analogy between such a "potters'-field" and the layer in question is very striking, and the inference appears likely that the people who made this corrugated and indented pottery made it in the same manner as the pueblo Indians now make their painted ware, and as they made it at the time of the conquest.

These very old manufacturers of indented ceramics were also a horticultural people, for they raised Indian corn. The cob found in the ashes, or rather cut out with the knife at some distance inside the bluff, is charred and small. To what variety of Zea it belongs the specialist must decide.

I hold it to be utterly useless, and even improper, on my part to speculate any further on these "pre-traditional" people. Perhaps I have already said too much. Excavations alone can throw further light on the subject.

THE TRADITIONAL AND DOCUMENTARY PERIOD.

The term "traditional" is applied to this period, because the people occupying the site of Old Pecos have left some traditions behind them, and not because we know when it commenced. In fact, I am much inclined to divide it, for the sake of convenience, into two periods again, one of which includes the occupation of the area within the circumvallation and its necessary annexes (field, etc.), whereas the other includes the area without. Of the former, we have definite knowledge in regard to its inhabitants; of the latter, we have none whatever. It is therefore also pre-traditional as yet. Nevertheless, I have included it in the second epoch, as its ruins indicate that its people possessed arts identical with those of the present pueblo Indians. Their pottery, wherever exposed,

was painted, figured, and vitrified in places; its ornamentation is exactly similar to that of the pottery of the interior area, and different from that of Zuñi. They used flint, but no trace of obsidian is found. This may be purely accidental; still, why should it occur at three places so totally different in regard to erosion and abrasion as the slope south of the church, the west bank of the creek directly opposite, and, if thorough examination should confirm the results of my cursory observations, the apron of the high mesa? The graves, wherever found, are identical with those of the *mesilla;* the plan of building, and consequently of living,[1] appears similar to that exhibited in houses *A* and *B*; the material used is the same, but the walls are more ruinous, and apparently of a much older date. The inference is therefore not unreasonable, that the inhabitants of the three areas named, as outside of the great circumvallation, were of the kind now called "pueblo Indians," who preceded the tribe of Pecos proper in point of time. It is not improbable that one or the other of these ruins may have been erected by the Pecos themselves before they settled on the mesilla. Still, there is neither proof nor disproval of this surmise extant.

There appears to be also a slight difference between the different ruins of this period themselves. The ruins south of the church and those along the mesa are similar, in that they are more ruined, and not covered with *débris*, and in that their surfaces are also devoid of pottery. The space west of the creek has pottery and also heaps of rubbish, and I therefore conclude that it was the most recent of the three locations, — or at least the one last abandoned. To it must be added the small mound or promontory found further south on the east

[1] Even the *estufa* and the *almacena* are found. The round depression near the road to the Rio Pecos (marked *L* on the general plan) is evidently an Estufa, while the circular ruin which I met upon the apron of the mesa during my ascent appears very much like a storehouse.

bank of the arroyo. One fact is certain: all these places were deserted, and perhaps as badly ruined as now, at the time when Coronado first visited Pecos.[1] (The partial removal of the surface material may have been effected by the Pecos Indians themselves in order to build their own houses.)

Referring now to the inhabitants of the two houses, whose ruins are situated on the mesilla, north of the church, it is a thoroughly well-authenticated fact that they spoke the same language as the Indians of the pueblo of Jemez. Jemez lies 80 miles N.W. of Pecos, beyond the Rio Grande. It is possible that the Pecos Indians came to the valley from that direction. But it is singular that, while there are no other settlements speaking this same idiom but Jemez and Pecos, these two pueblos should be separated, as early as at Coronado's time (1540), by three distinct linguistical stocks, different from theirs and lying across, intervening between them. Directly W. of Pecos the Queres, S.W. the Tanos, N. W. the Tehuas — all at war with the Jemez and the Pecos, and often with each other — lay like a barrier between the latter two. The point is an interesting one, as the pueblo of Pecos defines (together with Taos at the north) the utmost easterly limit to which the pueblo Indians seem to have penetrated.

Who were first in the valley of the Rio Grande? Did the Queres, Tanos, Tehuas, etc., drive out the Pecos, then already settled to the S. W., into the Sierra, or did the Pecos, migrating from Jemez, force their passage through the other tribes? I conjecture that the Jemez, etc., were the

[1] House *A* alone appears in these reports; but from the statement that the tribe mustered 500 warriors, it seems probable that *B* was also inhabited. 2,500 souls could hardly have found room in the 585 cells of *A*. The number of warriors given is doubtless a loose estimate.

first; that they migrated down the Rio Grande, and on the same area, between Sandía to the S. and Santa Fé, were gradually displaced by the others successively coming in, — one branch, the Jemez, recoiling into the mountains towards San Diego;[1] the other, the Pecos, driven up the cañon of San Cristóbal,[2] and finally, when the Tanos moved up into that valley, crossing over to the valley of Pecos.

This is to a great extent conjecture; still there are other singular indications. I give them with due reserve, however, formally protesting against any imputation that they are intended for anything else than to suggest problems for future study.

According to my friend Mr. A. S. Gatchet, of Washington, D. C., an excellent linguist, the Tanos and the inhabitants of Isleta, the most southerly pueblo on the Rio Grande still occupied, speak the same language.[3] The same is asserted here, as a known fact, to be the case with the Taos and the Picuries in the north, and the Isletas at the south. If this be true, then the supposition that the Queres and Tehuas are the latest intrusive stock would become a certainty. More than that: the Tanos prior to 1680, had their chief pueblo at San Cristóbal, N. E. of Galisteo, on the slope of the mesa of Pecos. They also had become dispossessed

[1] San Diego, now in ruins, about 13 miles N. of the pueblo Jemez, was the old pueblo of that tribe. It was the scene of a bloody struggle in 1692, according to the story of Hoosta-Nazlé, given to General Simpson in 1849. *Reconnoissance*, etc., p. 68. Diego de Vargas (*Carta*, Oct. 16, 1692), *Documentos para la Historia de México*, 3a séries, i. p. 131. "Los Gemex y los de Santo-Domingo se hallaban en otro tambien nuevo, dentro de la Sierra, á tres leguas del pueblo antiguo de Gemex." Nearly all the pueblos, upon the approach of the Spaniards, fled to steep and high mesas.

[2] This is the same cañon whose source on the "Mesa de Pecos" I have visited, and where the great bell was found. It is the natural pathway, from the W. and S. W., up to the heights overlooking the valley of Pecos.

[3] A. S. Gatchet, *Zwölf Sprachen aus dem Südwesten Nord-Amerika's*, Weimar, 1876, p. 41.

of the Rio Grande valley, and divided into (originally) two branches, — the Picuries and Taos north, and the Tanos, of Galisteo, east. Isleta itself is a later agglomeration.[1] There being no pueblo E. and S. E. of Pecos, then it appears that the Jemez, or rather Emmes, were the first migration, the Tanos the second, and the Queres and Tehuas the last.

The earliest traditions of the Pecos are preserved to us by Pedro de Castañeda, one of the eye-witnesses and chroniclers of Coronado's "march" in 1540. They told him that, five or six years (?) before the arrival of the Spaniards, a roaming tribe called the "Teyas" (Yutas) had ravaged the surroundings of their pueblo, and even, though fruitlessly, attempted to capture it.[2] This tribe was afterwards met by Coronado in the plains to the N. E. and E.[3]

Another tradition, very well known, — so well, indeed, that it has given to the name of the unlucky "capitan de la guerra" of the ancient Mexicans the honorific title of an aboriginal "cultus-hero," — is that of Montezuma.

I hope, at some future time, to be able to give some further information on this Spanish-Mexican importation. Suffice it to say for the present, that not a single one of the numerous chronicles and reports about New Mexico, up to the year 1680, mentions the Montezuma story! The word itself, Mon-te-zuma, is a corruption of the Mexican word "Mo-tecu-zoma," — literally, "my wrathy chief," — which corruption that emi-

[1] I infer it from the fact that it is not noticed previous to 1680. Agustin de Vetancurt, *Crónica de la Provincia del Santo Evangelio en México*, edition of 1871, pp. 310, 311. It then contained 2,000 "Tiguas;" but the church dedicated to San Antonio de Padua had just been brought under cover when the rebellion broke out.

[2] Castañeda, ii. cap. v. pp. 178, 179.

[3] Castañeda, pp. 189, 190. Jaramillo, pp. 372–382. Francisco Vasquez de Coronado, *Letter to Charles V.*, dated Tigues, Oct. 20, 1541. Appendix to *Voyage de Cibola*, pp. 356–359.

nently "reliable gentleman," Bernal Diez de Castillo, is to be thanked for. He wrote in 1568.[1]

What the Indians themselves say of this tale I have not as yet ascertained; but the people of the valley all assert that the people of the pueblo believe in it, — that they even affirmed that Montezuma was born at Pecos; that he wore golden shoes, and left for Mexico, where, for the sake of these valuable brogans, he was ruthlessly slaughtered. They further say that, when he left Pecos, he commanded that the holy fire should be kept burning till his return, in testimony whereof the sacred embers were kept aglow till 1840, and then transferred to Jemez.

There is one serious point in the whole story, and that is the illustration how an evident mixture of a name with the Christian faith in a personal redeemer, and dim recollections of Coronado's presence and promise to return,[2] could finally take the form of a mythological personage. In this respect, for the study of mythology in general, it is of great importance. That the sacred fire had, originally, nothing at all to do with the Montezuma legend is amply proven by the earliest reports.

It will also become interesting to ascertain in the future how many pueblos, and which, concede to Pecos the honor of being the birthplace of that famed individual, and how many, as is the case with other great folks in more civilized communities, claim the same honor for themselves.

I cannot, therefore, attach to the Montezuma tale any historical importance whatever, — not even a traditional value.

Of course, Castañeda reports the story which every Indian

[1] *Historia Verdadera de la Conquista de Nueva España.* Very valuable, but much influenced by personal views and prejudice.

[2] Fray Luis Descalona, a lay brother, who remained at Pecos in 1543, may have had a hand in this report. Castañeda, iii. cap. iv. pp. 214, 215. Jaramillo, p. 380.

tribe tells of themselves; namely, that the Pecos Indians were the bravest and the most warlike of the pueblos, and that in every encounter they were always victorious.[1]

Historical data, founded upon positive written records, begin for Pecos towards the fall of the year 1540, when Francisco Vasquez de Coronado, then at Zuñi or Cibola, sent the Captain Hernando de Alvarado with twenty men to visit a village called "Cicuyé."[2] Indians from that village, "situated seventy leagues towards the east"[3] from Zuñi, had visited the latter town, and offered to the Spanish leader "tanned hides, shields, and helmets." The hides were buffalo-robes, for the woolly hair was still on them.[4] Alvarado reached Cicuyé, passing, as I have elsewhere stated, through Acoma and Bernalillo. I have already identified Cicuyé with Pecos. Besides the proofs already given, a few descriptive abstracts from the report of Castañeda will add to the strength of the evidence: —

(p. 71.) "Five days' journeys further, Alvarado reached Cicuyé, a well-fortified village, whose houses are four stories high.

(p. 176.) "It is built on the summit of a rock. It forms a great square, in the centre of which are the *estufas*." (Compare general description and diagrams.)

(p. 177.) "The village is surrounded besides by a stone wall of rather low height. There is a spring which might be cut off."

In regard to the wall, I refer to the plans and descriptions; as for the spring, it trickles out beneath a massive ledge of rocks on the west side of the arroyo, nearly opposite to the field. Its water, slightly alkaline, is still limpid and cool, and a great source of comfort. The sketch upon the next page will give an idea of its appearance.

[1] Castañeda, pp. 176, 177.
[2] Id., xii. p. 68.
[3] Id., i. p. 68; ii. cap. vii. p. 188.
[4] Id., i. p. 69.

There is no trace of work about it. At sunset of the 3d of September, Mr. Bennet and I saw a herd of many hundred sheep and goats driven to this spring by Mexicans for water, although the creek still had a fillet of clear water running, and the pond in the old field was filled nearly to its brim; they still preferred the old source.

Finally, it must be borne in mind, that the name of Pecos, in the language of its former inhabitants and of those of Jemez, is "Âqiu," and that, in an anonymous report of the expedition of Coronado from the year 1541, Cicuyé is spelt Acuique.[1]

Castañeda gives some few details concerning the mode of life and the customs of the inhabitants. Aside from those which I have already mentioned, he notices the ladders (p. 176); that at night the inhabitants kept watch on the walls, the guard calling each other by means of "trumpets" (p. 179);

[1] *Relacion del Suceso de la Jornada que Francisco Vazquez hizo en el Descubrimiento de Cibola*, in vol. xiv. of the *Documentos del Archivo de Indias*, p. 325. "De unos Indios que se hallaron en este pueblo de Acuique." This would make it very important to consult the original manuscript of Castañeda in order to ascertain if "Cicuyé" is not really "Acuyé." The latter word would be identical almost with "Âqiu." The name Pecos itself belongs to the Qq'uêres language of New Mexico, and is pronounced "Pae-qo." It is applied to the inhabitants of the pueblo, the place itself being called "Pae-yoq'ona." The first mention of it under the name of Pecos is found in the documents of the year 1598, after the general meeting of Juan de Oñate with the pueblo Indians in the *estufa* of Santo Domingo (a Qq'uêres village).

that the unmarried females went naked until their marriage (p. 177); that the pueblo could muster 500 warriors (p. 176); and finally, that it was situated in a narrow valley in the midst of mountains covered with pines, and traversed by a small river where excellent trout is caught; very large otters, bears, and good hawks are found there (p. 179). The inhabitants received Alvarado with the sound of "drums and flutes, similar to fifes, which they use often." They presented to him a great quantity of cloth and turquoises, which are common in this province (p. 72). I must here add that the turquoise mines of "Serrillos" are, in a direct line, only about twenty miles nearly west of Pecos, in a country between the former pueblos of the Tanos and those of the Tehuas. I have seen splendid specimens of the mineral from that locality, and Mr. Thurston found and I have sent on a perforated bead of bluish color which he picked up among the rubbish of the house *B*.

When, in 1543, Coronado left Nuevo México with his whole army to return to Mexico, two ecclesiastics remained there, — Fray Juan de Padilla, who was subsequently killed by the Indians near Gran Quivira,[1] and a lay brother called Luis, who took up his abode at Pecos. Before Coronado left Bernalillo ("Tiguex"), he sent to brother Luis the remainder of the sheep. He was then of good cheer, but still expected to be killed some day by the old men of the tribe, who hated him, although the people were friendly to him in general.[2] Nothing was afterward heard of him. Thus Pecos was the first "mission" in New Mexico; perhaps, also, the first place where domestic quadrupeds became introduced.

Forty years elapse before we again hear of Pecos. The un-

[1] Castañeda, ii. cap. viii. pp. 194, 195; iii. cap. iv. p. 214. Jaramillo, p. 380. Vetancurt, *Menologio Franciscano*, Nov. 30, p. 386. Juan de Torquemada, *Monarchia Indiana*, first edition, 1614, lib. xxi. p. 689.

[2] Castañeda, ii. pp. 194, 195.

fortunate father, Augustin Ruiz, who, in 1581, attempted to convert the pueblos, did not reach further north than Puaray, where the Tiguas killed him, with his two companions.[1] But Antonio de Espejo, who, with fourteen soldiers, explored New Mexico in 1582 and 1583, visited Pecos. There can be no doubt but that the pueblos of the "Hubates" — two journeyings of six leagues to the east of the "Quires" — are the Pecos and the "Tamos," the Tanos.[2] Espejo is very liberal in his estimates: he gives to the "Hubates" five towns with 25,000 inhabitants, and to the "Tamos" even 40,000 souls. He says they had cotton cloth; he also says there was much good pine and cedar in their country, and that their houses were four and five stories high. His visit to the pueblo was of very short duration.

In 1590, Gaspar Castaño de la Sosa, "being then Lieutenant-Governor and Captain-General of the kingdom of New Leon," made a raid into New Mexico. It is possible that the pueblo which he came to on the 11th January, 1591, may have been Pecos.[3]

The "Spanish conquest of New Mexico" proper took place in the years 1597 and 1598, under Don Juan de Oñate. He met with little opposition, and his conquest amounted to little else than a military occupation, followed by the foundation of Santa Fé. On the 25th of July, 1598, he went to "the great pueblo of Pecos,"[4] and on the 9th of September, 1598, in the "principal *estufa*" of the pueblo of San Juan, the Pe-

[1] Vetancurt, *Menologio*, pp. 412–422. He calls him Rodriguez. Espejo, *Viaje*, etc., Hackluyt, iii. Gerónimo de Zarate Salmeron, p. 9.

[2] This is plain from the description, although Juan de Oñate (*Discurso de la Jornada que hizo el Capitan de su Magestad desde la Nueva-España á la Provincia de la Nueva-México, Archivos de Indias*, vol. xvi. p. 258) says of the "gran pueblo de los Peccos, y es el que Espejo llama la provincia de Tamos."

[3] Castaño, *Descubrimiento*, etc., p. 244. The "vigas grandes," in the *estufa*, recalls the great tree across the northern *estufa* in the court of *A*.

[4] Oñate, *Jornada*, p. 244.

cos pledged fidelity to the crown of Spain. On the same occasion, Fray Francisco de San Miguel became the first regular priest of the pueblo.[1] Here terminates the second period of the second epoch; and the last one begins where the history of the Pecos tribe, whatever is left of it, becomes almost exclusively documentary.[2]

Before, however, leaving this period, I must recall here two facts elicited by the reports of the forays and travels above mentioned. One is, that the Pecos Indians, however warlike they may have been towards outsiders, still were of an orderly, gentle disposition in every-day intercourse. This is a natural consequence of their organization and degree of development. The other and more important one is, that Pecos was the most easterly pueblo in existence in 1540, and that even at that time it was quite alone.

Castañeda says (p. 188): "In order to understand how the country is inhabited in the centre of the mountains, we must remember that from Chichilticah, where they begin, there are eighty leagues; thence to Cicuyé, which is the last village, they reckon seventy leagues, and thirty from Cicuyé to the beginning of the plains."

Juan Jaramillo, another eye-witness of "Coronado's march," intimates a similar fact.[3]

In regard to Pecos being "quite alone," Castañeda is positive; so is Juan de Oñate, who received and registered its submission. It is true, however, that Castañeda mentions a small pueblo as subject to Cicuyé, which pueblo, however, he says was half destroyed at his time. He locates it "between the road and the Sierra Nevada."[4] This may have been the small ruin noticed near Kingman.

These facts are very interesting in their bearings upon the

[1] *Obediencia*, etc., *Archivos*, xvi. p. 113.
[2] pp. 371, 372.
[3] pp. 371, 372.
[4] p. 179.

older ruins of Pecos. It goes far towards furnishing additional proof that they were indeed abandoned and decayed already in 1540. In regard to building *B*, it is ignored in the reports, *A*, with its vast court and its *estufas*, claiming exclusive attention. Still there is no room left for doubt that *B* was occupied during this period. But it is evident, from the statements of the eye-witnesses, that *A* was the principal abode of the Pecos tribe in 1540 and afterwards.

THE DOCUMENTARY PERIOD,

commencing in 1598, and running up to the present time. Here we should be entitled to find, of course, ample and detailed documentary evidence. Two unfortunate occurrences, however, have contributed to destroy the records of the territory of New Mexico.

In the month of August, 1680, when the pueblo Indians rose in successful revolt against the Spanish rule, and captured the "villa" of Santa Fé, they brought the archives, ecclesiastical and civil, into the plaza, and made a bonfire of the entire pile. This was an act of barbarous warfare. But few papers escaped the general destruction; these were saved by Governor Don Antonio de Otermin, and sent to El Paso del Norte, where they are still supposed to remain. We are, therefore, as far as the period of 1598–1680 is concerned, almost exclusively reduced to general works like the "Teatro Mexicano" of Fray Augustin de Vetancurt, and to the collections of documents published at Mexico and at Madrid. That, nevertheless, some documents were saved, and subsequently carried back to Santa Fé, is proved by the fact that Mr. Louis Felsenthal, of this city, has recovered one, a copy of which it is hoped will appear in the Journal of the Institute in time.

Subsequent to the return of the Spaniards, the archives of

Santa Fé were kept in good order by its administrators, the last revision thereof being made by Governor Donaciano Vigil. In 1870, however, the man who then acted as Governor of the Territory, although otherwise of irreproachable character, permitted an act of vandalism almost without its parallel. The archives had accumulated in the palace to a vast extent: the original good order in which they were kept had been totally neglected during and since the war of secession; there was not even a custodian for them. So the head of the executive of this territory suffered its archives to be sold as waste paper, even sometimes used as kindling in the offices. Of the entire carefully nursed documentary treasures, the accumulation of 190 years, the Hon. Samuel Ellison, of this city (notwithstanding his feeble health), has been able to register about fifty bundles (*legajos*), whereas wagon-loads were scattered or sold for wrapping.

Many of the intelligent inhabitants attempted to save what they could, and there are some who succeeded to a limited extent; but of what yet remained in the palace, reduced to a sufficiently small bulk as not to be "in the way" any longer, even the valuable journals of Otermin and Vargas were considerably reduced through further decay.

This has been, in times of profound peace and in the nineteenth century, the fate of the archives of New Mexico.

Ever since, the legislature of the territory has been, in fact, utterly neglectful of its public documents. Each and every reminder in the shape of a petition has been disregarded, and only Governor L. Wallace has at last succeeded in having them overhauled. Hon. W. G. Ritch effected their removal to a suitable place, and it is to the acts of these gentlemen, and to the labor of love of Mr. Ellison, that we owe the preservation of what now remains.

What little documentary evidence has, therefore, been left

at my disposal, contains, as might be supposed, meagre information concerning the pueblo of Pecos. The older church annals I have not been able to find, for those at the Plaza de Pecos date back only to 1862. Whither they have gone I am unable to tell, except that they are not at Santa Fé.

About the year 1628, through the action of Fray Francisco de Apodaca,[1] then Commissary-General of the Franciscan order in Mexico, religious life in this territory obtained a new impulse. Until then the work performed had been almost exclusively missionary work; the priests had (and still have) enormous districts to visit. Thus: that of the first priest of Pecos embraced from N. to S. a country of over 60 miles long, and 30 to 50 wide from E. to W. However, after Fray Gerónimo de Zarate Salmeron had addressed to his superior at Mexico his remarkable report in the year 1626,[2] a new life began. It is therefore after 1629 that the large church at Pecos was erected, but I am as yet unable to give the exact dates. This church and the "convent" were both built by Indians, whom the fathers had taught to square timbers, to ornament them with simple friezes and scroll-work, and to make adobe in the manner now practised, namely, mixing straw with the clay and moulding it in boxes. They were also taught to grow wheat and oats, and their flocks increased. In addition to being a horticultural people they became herders, and the pueblo was prosperous. Its church was renowned as the finest in New Mexico.[3] Whereas Santa Fé, in 1667, had but

[1] Fray Francisco de Apodaca, native of Cantabria, was commissary from 1627 till 1633. Vetancurt, *Menologio*, p. 464. Davis, *Conquest of New Mexico*, cap. xxxv. p. 278.

[2] Published in vol. i. of 3a séries of *Documentos para la Historia de México*. In consequence of it, Fray Estiban de Perea came to New Mexico with thirty priests. Vetancurt, *Crónica*, p. 300. "Con cuyo ejemplo y enseñanza se poblaron treinta y siete casas de diferentes naciones," among which the Pecos.

[3] Jean Blaeu, *Douzième Volume de la Géographie Blaviane, contenant l'Amérique*, etc., Amsterdam, 1667, p. 62. He says Picuries, but it must be Pecos. "Avec

250 inhabitants,[1] Pecos, as late as 1680, sheltered 2,000 Indians.[2]

Still, during this very time of comparative prosperity, a storm was brewing in New Mexico, from whose effects its sedentary Indians never recovered. This was the great rebellion of 1680. The Indians of Pecos claim to have remained neutral during that bloody massacre, and I am inclined to believe their statements. Nevertheless, it is a positive fact that, on the 10th of August of the aforesaid year, their priest, Fray Fernando de Velasco, was murdered and their church sacked.[3] By whom, then, was it done? The reply is intimated by the place where the great bell was found, and by the events intervening between 1680 and 1692, when Diego de Vargas recaptured Santa Fé. It will be remembered that the bell was left on the slope of the high *mesa* towards the S.W., in the rocky and desolate gorge descending towards the pueblo San Cristóbal, the old home of the Tanos tribe.[4] Father José Amanda Niel writes, about twenty-five or thirty years after the rebellion, that the Tanos secured the greatest part of the booty, among which were bells (*campanas*).[5] That this bell was not carried to the high *mesa* by the Pecos I believe I have proved; its proximity to the Tanos village, and its actual position in the *cañada* leading towards the latter, shows that it was either to be carried down to it or carried up from it. If it is (as cur-

un seul bourg, mais grandement peuplé, où il y a un temple somptueux." Vetancurt, *Crónica*, etc., p. 323. "Tenia á nuestra Señora de los Angeles de Porciúncula un templo magnífico, con seis torres, tres de cada lado, adornado; las paredes tan anchas que en sus concavidades estaban hechas oficinas." There are still, in the church of the plaza of Pecos, three paintings out of that church,—one on buffalo-hide, representing Nra. Sra. de Guadalupe, and two on cloth, with Our Lady of the Angels painted on it. The last two are very good.

[1] Blaeu, p. 62.

[2] Vetancurt, *Crónica*, p. 323.

[3] Ibid.

[4] Oñate, p. 258.

[5] *Apuntamientos*, etc., p. 104.

rent report has it) the bell of Pecos, then it was a trophy which the Tanos secured when they, on the 10th of August, 1680, committed the atrocities at the pueblo of Pecos; and this would make it extremely probable, also, that the slaughter of Father Velasco was accompanied by that partial destruction of the buildings *A* and *B*, which I have described, and which appears to have been partly repaired by means of material taken from the church, and of adobe containing wheat-straw. This is rendered more likely by the events subsequent to the driving out of the Spaniards, and it does not appear that the Pecos Indians took any part even in their expulsion.

After the victorious aborigines had returned from their pursuit of Otermin, dissensions arose among them, and intertribal warfare, in conformity with their pristine condition, set in. The Pecos, aided by the Queres, made a violent onslaught on the Tanos, compelling them to abandon San Cristóbal and San Lázaro.[1] This looks very much like an act of retaliation. During that time the Spaniards were not idle. In 1682, Governor Otermin penetrated as far as Cochiti,[2] but appears to have taken no notice of Pecos. In 1689, however, Don Domingo Gironza Petroz de Cruzate made a successful raid into New Mexico, in which raid the warriors of Pecos assisted him against the other tribes. In reward of their services he, on the 25th of September, 1689, after his return to El Paso del Norte, executed there the document a copy of which is hereto appended, and for which I am indebted to the kindness of my friend David J. Miller, Esq., chief clerk of the Surveyor General's Office at Santa Fé. It is a grant to the tribe of Pecos of all the lands one league north, south, east, and west from their pueblo ("una legua en cuadro"), there-

[1] "Este Cuaderno se cree ser de un Religioso de la Provincia del Santo Evangelio" (*Anonymous Report on New Mexico*), *Documentos*, 3a série, vol. i. p. 127.

[2] Davis, cap. xlii. p. 329.

fore four square leagues, or 18,763$\frac{33}{100}$ acres, to be therefore their joint and common property. When, therefore, in the afternoon of the 17th of October, 1692, Diego de Vargas Zapata, having recaptured Santa Fé from the Tanos who then held its ruins,[1] moved upon Pecos, he was received by the whole tribe with demonstrations of joy,[2] and the "capitan de la guerra" of the pueblo afterwards assisted him in subduing a second outbreak in 1694.[3]

The result for the pueblos of the great revolt in New Mexico was a gradual diminution in the numbers of their inhabitants. It was the beginning of decline. The Tanos had been in some places nearly exterminated, and all the others more or less weakened.[4] The distant Moqui, far off in Arizona, were the sole gainers by the occurrence, receiving accessions from fugitives of New Mexico.[5] But it would be incorrect to attribute this weakening of the pueblos during that time to the warfare with the Spaniards, or to the latter's retaliatory measures after final triumph. Vargas was energetic in action, but not cruel. A few of those who had committed peculiar atrocities were executed, but the remnants of the pueblos were reestablished in their franchises and privileges as autonomous communities. It is the intertribal warfare, which commenced again as soon as the aborigines were left to themselves, and drouth accompanying the bitter and bloody feuds, which destroyed the pueblos of the Rio Grande Valley.[6] The Pecos, isolated and therefore less exposed, suffered proportionately

[1] Escalante, *Letter*, p. 123. Diego de Vargas, *Carta á S. E.*, etc., p. 129.

[2] Davis, cap. xlv. pp. 348, 349.

[3] Davis, cap. l. p. 396; cap. li. p. 402.

[4] Niel, p. 104. Escalante, p. 123.

[5] Niel, pp. 104–106. Escalante, p. 122. Gobierno de Don Francisco Cubero y Valdes, *Documentos*, 3a série, vol. i. p. 194.

[6] Gobierno de Don Francisco Cubero y Valdes, p. 195. In 1712 the pueblo of Pojuaque (north of Santa Fé) contained but seventy-nine inhabitants, — all Tehuas.

less; still, their time was come also, though in a different way.[1]

I have already stated that, in the beginning of the eighteenth century, the Utes introduced near the pueblo of Taos another branch of the great Shoshone stock, — the *Comanches*. This tribe soon expelled the Apaches,[2] who had not been exceedingly troublesome to the pueblos, and, a vigorous northern stock, became that fearful scourge of all the surrounding settlements, which they have continued to be for 150 years. Their efforts were mainly directed against the pueblo of Pecos, as the most south-easterly village exposed to their attacks. On one occasion the Comanches slaughtered all the "young men" of Pecos but one, — a blow from which the tribe never recovered. Thus, when the Indians of the Rio Grande rose in arms against the Mexicans in 1837, as has been so ably described by Mr. D. J. Miller,[3] the Pecos did not take any part, for there were only eighteen adults left, huddled together in the northern wing of the huge building *A*, and watching the sacred embers in the face of slow, inevitable destruction.

Then, in the following year, 1838, an event took place which, simple and natural as it is, still illustrates forcibly the powerful link which the bond of language creates between distant Indian communities. The pueblos of Pecos and Jemez had been almost without intercourse for centuries; but in the year 1838, says Mariano Ruiz, the principal men of Jemez appeared in person on the site of Pecos and held a talk with its occupants. They had heard of the weakness of their brethren, of their forlorn condition, and now came to offer them a new

[1] Niel, p. 104. "De los Pecos quedaron mas."

[2] The Apaches were in intercourse with Taos until 1700 A.D. *Sesto Cuaderno, Documentos*, 3a série, i. p. 180.

[3] *Historical Sketch of Santa Fé*, pp. 22, 23, in the pamphlet on *Centennial Celebration*, 1876. It is the only printed report in existence, except a very short one by Judge K. Benedict, on the revolt of 1837.

home within the walls of their own pueblo. The Pecos took the proposal under consideration, but were loth to leave the home where they had lived for so many centuries. In the following year "mountain fever" broke out among them, and only five adults remained alive. These, by joint indentures, sold the majority of the lands granted to them in 1689 by Cruzate.[1] Another portion was left to Ruiz as "son of the tribe." In 1840 these five men, named respectively Antonio (*gobernador*, and still living at Jemez), Gregorio, Goya, Juan Domingo, and Francisco, appeared before Don Manuel Armijo, then Mexican governor of the territory, and declared to him their intention to abandon their home and to seek refuge among their kindred at Jemez. Soon after, the *gobernador*, the *capitan de la guerra*, and the *cacique* of Jemez, with several other Indians of that tribe, appeared at Pecos. The sacred embers disappeared, tradition being, according to the Hon. W. G. Ritch, Secretary of the Territory, that they were returned to Montezuma.[2] The remnants of the tribe moved on with their chattels, and guided by their friends, to Jemez, where, in a few months, I hope to visit "the last of the Pecos."

MISCELLANEOUS OBSERVATIONS.

About the mythology of the Pecos Indians, aside from the Montezuma story and the sacred embers, the tale of the *Great*

[1] I have not as yet been able to consult the archives of San Miguel County, at Las Vegas, in regard to the different "Deeds" then executed. Therefore I forbear mentioning even the names of the grantees of which I was informed.

[2] The Hon. W. G. Ritch is in possession of a number of highly interesting data gathered from the Indians in relation to the sacred fire. All of these he has, in the kindest manner, placed at my disposal. I, however, defer their mention for a future report, in connection, as I hope, with the pueblo of Jemez. I shall but refer here to a single one. There were, formerly, several fires burning. One of these, that of the *cacique*, was never permitted to go out, so that, in case one of the others should accidentally become extinguished, it could always be rekindled from the "extra-holy" one.

Snake ("la vívora grande") appears to be widely circulated. It is positively asserted[1] that the Pecos adored, and the Jemez and Taos still adore, an enormous rattlesnake, which they keep alive in some inaccessible and hidden mountain recess. It is even dimly hinted at that human sacrifices might be associated with this already sufficiently hideous cult. I give these facts as they were given to me, and shall not believe them until I am compelled. It has always been the natural tendency in everything which (like the idolatrous practices still existing among the pueblos, of which there is no doubt) we do not positively know, to make bad look worse and good better than it actually is. The prospect of securing a knowledge of it is, however, not very good. The Indians themselves appear to deny it, and are generally very reticent about their aboriginal beliefs.

I have previously mentioned that Ruiz had been called upon by the Indians of Pecos to do his duty by attending to the sacred fire for one year, and that he refused. The reason for his refusal appears to have been that there was a belief to the effect that any one who had ever attended to the embers would, if he left the tribe, die without fail, and he did not wish to expose himself to such a fate.

About the social organization of the Pecos Indians, it has not been possible, of course, to ascertain anything as yet. That they lived on the communal plan is plainly shown by the construction of their houses. That they were originally, at least, organized into clans or *gentes*, can be inferred; but here I must remark that it may be difficult to trace those clusters among the Rio Grande pueblos, on account of their weakness in numbers, and of the intermixture of the Tehua, Tanos,

[1] Even Ruiz affirmed that the tale, as far as the Pecos were concerned, was certainly true. He never could get to see the reptile, however. It is a rattlesnake (*cascabel*).

and Queres stocks resulting from the convulsion of 1680. It may be possible, however, to find them at Jemez. They exist at Laguna and among the Moquis, according to Mr. Morgan, and I do not doubt but that Mr. Cushing, who is so thoroughly studying the Zuñi Indians, has by this time settled the question for that tribe. One fact, however, I consider to be ascertained; namely, that there were neither castes nor classes among the pueblos, therefore not at Pecos. At the head of their communal government were the usual three officers, — the *gobernador*, the *capitan de la guerra*, and the *cacique*. I am not quite clear yet as to the proper functions of each, except that the first two are both warriors ("ambos son guerreros," Ruiz); that the *capitan* has also the supervision of the lands of the tribe; and that the *cacique* is more or less a religious functionary. Mr. D. J. Miller states that the latter very seldom leaves the pueblo. It was therefore an unusual act when the *cacique* of Jemez came to Pecos in 1840, and I presume it was brought about through his connection with the holy fire. I asked Sr. Ruiz very distinctly as to whether these three officers were elective or not, and he promptly affirmed that they were ("son elegidos por el pueblo"). I then inquired if the sons succeeded to the fathers in office, and his reply was that there was no objection to their being elected thereto if they were qualified ("si son buenos"). This disposes of the question of heredity in office, rank, and title, and it is almost identical with the customs found by Alonzo de Zuevita among the Indians of Mexico in the middle of the sixteenth century. How the presumable "gentes" of the Pecos might have localized for dwelling in the great communal houses I am, of course, unable to conjecture.

In regard to their marriage customs, their mode of naming children, etc., I have not been able to gather much information as yet. The old marriage customs are supplanted by

those of the church. Still, they may be traced up eventually. Every Pecos Indian had, besides his Spanish name, an Indian name; and there is, according to Mr. Ritch, still a Pecos Indian at Jemez whose aboriginal appellation is "Huaja-toya" (Spanish pronunciation). I heard of him this morning (Sept. 17) through an Indian of Jemez. What I know of their burials is already stated.

Of their agriculture, or rather horticulture, I have also spoken; the modes of cultivation have not been explained to me as yet. Irrigation is therefore the only part of their tillage system upon which I have been able to gather any information. In addition to what the preceding pages may contain, Sr. Vigil has assured me that they also irrigated their *huerta* from the *arroyo*. This thin fillet of clear water, now scarcely 0.50 m. — 20 in. — in width, fills at times its entire gravelly bed, 100 m. to 150 m. — 327 ft. to 490 ft. — from bank to bank. This does not occur annually, but at irregular intervals. Sr. Ruiz said that while the Pecos Indians were living at their pueblo the streams were filled with water ("en ese tiempo, corrieron los arroyos con agua, muy abundante"). It is further said that the tribe worked other "gardens" besides, on the banks of the river Pecos, two miles to the east.

For their arts and industry I must refer to the collections, however meagre and unsatisfactory they are; a condition for which I have already apologized. Nowhere did I find a trace of iron nor of copper, although they used the latter for ornaments (bracelets, etc.), and there can be no doubt that they had the former metal also, — after the Spanish conquest, of course. The squaring of timbers, the scroll-work and friezes in the church, could only be done with instruments of iron. But all traces of these implements have disappeared from the ruins, as far as the surface is concerned. I can-

not refrain, however, from dwelling at greater length upon two products of industry, so common among the ruins as hardly to attract the attention of curiosity-hunters any more. These are the flakes of obsidian and lava and the painted pottery.

I have called these flakes a product of industry; while the material itself is of course a mineral, the fragments scattered about are undoubted products of skill. They are chips and splinters. There is neither lava nor obsidian cropping out in or about the valley,[1] but highly volcanic formations are abundantly found to the north, within fifty miles from Pecos, in the high Sierra de Mora; perhaps, also, nearer yet. At all events, the mineral has been brought to the pueblo and chipped there. The same is the case with the flint flakes, agates, jaspers, and moss-agates, with the difference, however, that, in the case of these, water has done a great part of the carrying, if not all; whereas the drift of the *arroyo* contains no obsidian nor lava, except such as has clearly been washed into it from the ruins. Among the flakes there will be noticed several which may have been used for knives, whereas still others approximate to the arrow-head. A small perfect arrow-head was found and transmitted by me to the Institute, — the only one I met with on the premises.[2]

The fact that several localities at Pecos are completely devoid of obsidian has already been mentioned. These are

[1] I am informed by Mr. Miller that blocks or "chunks" of obsidian, as large as a fist or larger, are found in the Arroyo de Taos. This would be about 60 miles north of Santa Fé.

[2] In regard to the regular indentation of arrow-heads, I was informed by Mr. Debrant, then incidentally at Baughl's (on the 4th of September), that these were produced by contact with fire. Applying a glowing coal (the end of a burning stick) to the edge of the flint, and blowing on it steadily, after a few seconds a speck of the mineral will fly off, leaving a groove or indentation proportionate in size to the coal used and to the length of time applied. Thus, an arrow-head may be indented in a very short time, which would be impossible by chipping.

the oldest ruins. In the case of the ruins along the *mesa* and those south of the church, I can only speak of the surface; but where the corrugated pottery was found the whole section of the bluff was exposed for more than 100 m. — 327 ft., — and still not a trace of the mineral appeared, while flint, agate, and jasper were rather conspicuous.[1] This may be accidental, but it is certainly suspicious and suggestive.

The painted pottery is scattered in wagon-loads of fragments over the ruins. There are two places, however, where, as already stated, the surface is utterly devoid of them. Whether or not this deficiency extends to the soil, I cannot tell. I doubt it, however. These localities are, again, the apron along the *mesa* and the ruins south of the church. For the rest, it is very equally distributed everywhere. Still there are two distinct kinds at least. One is exactly similar to the kind now made and sold: it is coarse, soft; the ground is painted gray or yellow; the ornaments show, in few instances, traces of animal shapes (they are either black or brown); and the vessels must have been thick, and with a thicker coarse rim. Out of the grave in the mound *V*, the pottery was more perfect. There are pieces of a *tinaja* (bowl) with a vertical rim, yellow outside, white inside, with black geometrical ornamentation, not vitrified. This kind of pottery is still made by the Indians of Nambé, of Tezuque, and of Cochiti. (The former two are Tehuas, the latter is Queres.) But there I also found fragments of a plain black pottery, of dark red, and of dark red with black ornaments, which are thinner and much superior in "ring," and therefore in quality, to any now made. This pottery is older in date, and appears to be almost a lost art. There was, however, no distinction in distribution. Both kinds have one point in common, namely, the varnishing of the

[1] Moss-agate is also found, but rarely.

ornamental surfaces. I say varnishing,[1] and not "glazing;" for, although I believe the glassy appearance of the painted lines to be due to some admixture of the coloring material, and not to a separate glossy exterior coating, I do not as yet find a reason for admitting that the Indians knew the process of vitrification.

Of the military manufactures of the Pecos, a small arrow-head of obsidian found near the church is the only trace. It is even too small for a war-arrow. They had stone hatchets, and may have had the dart, and, later on, the spear. Pebbles convenient for hurling are promiscuously observed on the *mesilla*, but they are not numerous; and nowhere along the circumvallation did I notice any trace of heaps.[2] The military constructions, however, become very interesting through their connection with the system of drainage and a comparison with the ancient Mexicans. Around the ancient pueblo of Mexico ("Tenuchtitlan") the water formed the protective circumvallation; at Pecos, the defensive wall collected the water and conducted it where it was needed for subsistence for the irrigation of crops.

That this great circumvallation, 983 m. — 3,225 ft. — in circuit, was a wall for protection also there is no doubt, although the main strength of the pueblo lay in the construction of its houses, where the inhabitants could simply shut themselves in and await quietly until the enemy was tired of prowling around it. By Indians it could only be carried by surprise or treachery.[3] Hence it was customary for the young men to leave the

[1] Compare W. H. Holmes, *U. S. Geographical Survey*, 1876, p. 404.

[2] That stones were used, both in offensive as well as in defensive warfare, is proven by Castañeda, ii. cap. v. p. 178; i. cap. xii. p. 69. It is possible that the pebbles used were kept on the roofs, as was the custom among the ancient Mexicans.

[3] Thus the probability of the destruction of a part of Pecos by the Tanos, on the 10th of August, 1680, is still further increased.

pueblo at times in a body, abandoning it to the old men and women, etc., without concern.[1] As long as these kept good watch they were safe, even if the Comanches should appear. Roaming Indians cannot break open a pueblo house if well guarded. For that purpose alone the mounds near the great gate, and the mound *H*, Pl. IV., were erected. They were watch-towers for special purposes, for particular sections, where the lookouts from the wall-tops were not sufficient.[2] These two mounds — one on each side of the gateway — overlooked the fields and the creek-bank: in the morning, when the people went out to work, or to carry drinking water from the spring opposite; during the day, while they attended to their simple labor of tillage.

The mound and tower *H* performed a similar office towards the steep ledge of rocks there descending, among whose fragments Indians could hide for hours from the scouts on the house tops. Thus the great enclosure with its details served a triple purpose. It was the reservoir which held and conducted the waters precipitated on the *mesilla* to the useful purpose of irrigation. It was a preliminary defensive line, — a first obstruction to a storming foe, and a shelter for its defenders. But it was also in places an admirable post of observation. It formed the necessary complement to the houses themselves,[3] and both together composed a system of defences which, inadequate against the military science of civilization,

[1] Therefore the massacre of all their available men by the Comanches, already mentioned. I could not as yet find the date of the event. It is a well-known tradition, however. It occurred in the *moro*.

[2] That constant guard was kept on the housetops is stated by Castañeda, ii. p. 179.

[3] The defensive constructions of the pueblos, as late as 1540, were the houses. The wall of Pecos is an exception. Castañeda says (i. cap. xiv. p. 80): "As these villages have no streets, that all the houses are of the same height and common to all the inhabitants, these large houses must be captured first, because they are the points of defence."

was still wonderfully adapted for protection against the stealthy, lurking approach, the impetuous but "short-winded" dash, of Indian warfare.

In conclusion of this lengthy report, I may be permitted to add a few lines concerning the great houses themselves. Their mode and manner of construction and occupation I have already discussed; it is their abandonment and decay to which I wish to refer. This decay is the same in both houses; the path of ruin from S. S. E. to N. N. W. indicates its progress. It shows clearly that, as section after section had been originally added as the tribe increased in number, so cell after cell (or section after section) was successively vacated and left to ruin as their numbers waned, till at last the northern end of the building alone sheltered the poor survivors. They receded from south to north; for the church, despoiled and partly destroyed in 1680, was no protection to them. Its own ruin kept pace with that of the tribe.[1] The northern extremity of the pueblo was their best stronghold, and thither they retired step by step in the face of inevitable doom.

A. F. BANDELIER.

SANTA FÉ, Sept. 17, 1880.

TO PROFESSOR C. E. NORTON, *President of the Archæological Institute of America, Cambridge, Mass.*

[1] The church of Pecos, although it had lost all its former splendor, still was used till about 1840. Afterwards it was abandoned.

GRANT OF 1689 TO THE PUEBLO OF PECOS.

The following is a literal copy of the original grant, now (Sept. 25, 1880) on file at the United States Surveyor-General's office at Santa Fé, made to the inhabitants of the Indian pueblo of Pecos in New Mexico. The language of the document is not altogether clear, but the essential terms are distinct: —

MERCED CONCEDIDA Á PECOS.

Año de 1689 En el Pueblo de nu. Sª de Guadalupe del Paso del Rio del Norte en veinte y cinco dias del mes de Septᵉ de mil seiscientos y ochenta y nueve años el Señor Govᵒʳ y Capⁿ Genˡ Dⁿ Domingo Jironza Petroz de Cruzate dijo que por quanto en el alcanze que se dio en los de la Nueva Mexᶜᵒ de los Yndios Queres y los Apostatas y los Teguas y de la nacion Thanos y despues de haber peleado con todos los demas Yndios de todos Pueblos un Yndio del Pueblo de Zia llamado Bartolomé de Ojeda que fue el que mas se señaló en la vatalla acudiendo á todas partes se rindio viendose herido de un balazo y un flechaso lo cual como dicho es mando que debajo de juramᵗᵒ declare como se halla el Puᵒ de Pecos aunque queda muy metido á donde el sol sale y fueron unos Yndios Apostatas de aquel Reyno de la Nueva Mexico.

Preguntado que si este Puᵒ volverá en algun tiempo como ha sido constumbre en ellos y dice el confesante que no que ya está muy metido en terror que aunque estaban abilantados con lo que les habia susedido á los de el Puᵒ de Zia el año pasado juzgaba que era un imposible que dejaran de dar la obediencia; por lo cual se concedieron por el Señor Governador y Capitan General Dⁿ Domingo Jironza Petroz de Cruzate los linderos que aqui anoto; para el Norte una legua; y para el Oriente una legua; y para el Poniente una legua; y para el Sur una legua; y medidas estas cuatro lineas de las cuatro esquinas del Puᵒ dejando á salvo el templo que queda al medio dia del Puᵒ y asi lo proveyo mando y firmo suscª [?] á mi el presente Secretario de Govᵒⁿ y Guerra que de ello doy fé. Dⁿ Domingo J'ronza Petroz de Cruzate.

Ante mi
Don Pedro Ladron de Guitara
Scᵒ de Gⁿ y Guª

[TRANSLATION.]

In the year 1689. In the Pueblo of Our Lady of Guadalupe of El Paso del Rio del Norte, on the twenty-fifth day of the month of September, in the year sixteen hundred and eighty nine, the Governor and Captain-General, Don Domingo Jironza Petroz de Cruzate, said that inasmuch as during the pursuit of the men of New Mexico, [namely], of the Queres Indians, and the Renegades, and the Teguas, and those of the Thanos nation, and after the fight with all the rest of the Indians of all the Pueblos — an Indian of the Pueblo of Zia, named Bartholomé de Ojeda, who had greatly distinguished himself in the fight, assisting at every point, surrendered, having been wounded by a bullet and by an arrow; he [the Governor] ordered that he should declare, under oath, how the Pueblo of Pecos is disposed, although it lies far off toward the sunrise, and [its people] are renegade Indians of that kingdom of New Mexico.

GRANT GIVEN TO PECOS.

Being asked whether [the inhabitants of] this Pueblo will ever return to their old ways, he, the deponent, says that they will not, since they are now in great terror, and though they were very much emboldened by what had happened to those of the Pueblo of Zia the year before, he thought it was impossible that they should fail to give in their submission. Wherefore there were granted by the Governor and Captain-General, Don Domingo Jironza Petroz de Cruzate, the boundaries here noted: to the north a league, and to the east a league, and to the west a league, and to the south a league; and these four lines measured from the four corners of the Pueblo, reserving the temple, which lies to the south of the Pueblo; and thus did his Excellency provide, command, and sign before me, the present Secretary of the Interior and of War, who attest it.

DON DOMINGO JIRONZA
PETROZ DE CRUZATE.

Before me,
Don Pedro Ladron de Guitara,
Secretary of the Interior and of War.